System of **National Accounts** **2025**

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United Nations

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United Nations

European Commission

Organisation for Economic Co-operation and Development

International Monetary Fund

The World Bank Group

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Preface

A. Introduction

The *System of National Accounts, 2025 (*2025 SNA*)* is an update of the *System of National Accounts, 2008 (see note 1)*[1]. It is the sixth version of the SNA, the first of which was published more than seventy years ago. At its fifty-first session in 2020, the Statistical Commission requested, for consideration by the Commission at its fifty-second session in 2021, a road map for the revision of SNA for adoption by the Commission in 2025. The programme for the update of the 2008 SNA was endorsed by the Commission at its fifty-second session.

The 2025 SNA retains the basic theoretical framework of the 2008 SNA. However, in line with the mandate of the Commission, the 2025 SNA introduces treatments for new aspects of the economy that have come into prominence, elaborates on aspects that have increasingly become the focus of analytical attention and clarifies guidance on a wide range of issues, based on advances in methodological research and needs of users. These include topics such as globalization, digitalization, emerging financial issues, Islamic finance and the informal economy. A unique feature of the 2025 SNA is the broadening of the national accounts framework to better account for elements affecting well-being and sustainability to inform various policy goals.

To ensure full consistency, the seventh edition of International Monetary Fund Integrated Balance of Payments and International Investment Position Manual (BPM7) was developed in parallel to the 2025 SNA, sharing the same text in chapters relevant to both standards. For the most part, the common chapter text is identical across the two standards. However, the versions of the common chapters included in the 2025 SNA contain additional details relevant for the national accounts, while the versions included in the BPM7 contain additional details relevant for the external accounts. Further, consistency with other related manuals, such as those on government finance statistics and on monetary and financial statistics and environment-economic accounting was an important consideration in the update.

The 2025 SNA was prepared under the auspices of the Inter-Secretariat Working Group on National Accounts (ISWGNA), assisted by the Advisory Expert Group on National Accounts and in the case of common topics and chapters, the IMF Balance of Payments Committee (BOPCOM). The ISWGNA consists of five organizations: the Statistical Office of the European Union (Eurostat), the International Monetary Fund (IMF), the Organisation for Economic Co-operation and Development (OECD), the United Nations Statistics Division (UNSD) and regional commissions of the United Nations Secretariat and the World Bank. The 2025 SNA is published jointly by the five organizations.

Adoption of the 2025 SNA, as the updated international statistical standard for national accounts statistics, was unanimously recommended to the United Nations Economic and Social Council by its Statistical Commission at its fifty-sixth session, held in New York from 4 to 7 March 2025 (see note 2)[2]. In its resolution 2025/X of xx XXX 2025, the Council recommends that Member States consider the 2025 SNA as the international standard for the compilation of their national accounts statistics, in order to promote the integration of economic and related statistics, as an analytical tool, and in the international reporting of comparable national accounting data. The Council further recommends the alignment of international macroeconomic statistical standards with the 2025 SNA when these standards for particular domains of economic statistics are reviewed and endeavour to achieve consistency as accomplished between the 2025 SNA and the BPM7; and, when differences remain, explain the rationale for those differences and provide a full reconciliation between them to the extent possible.

The 2025 SNA comprises 39 chapters, compared with 29 chapters in the 2008 SNA. New chapters cover key aspects, such as chapters on digitization, globalization and Islamic finance. A new chapter 2, entitled "National accounts and measures of well-being and sustainability", describes where the national accounts can contribute to better understanding well-being and sustainability, including where the framework can be extended, and where additional, often complementary statistics, such as those from the System of Environmental-Economic Accounting, can be used to obtain a more comprehensive understanding of these issues. Some of the existing chapters are split to better deal with cross-cutting issues.

The 2025 SNA includes the following main headings: i. Introduction and overview (chapters 1 – 3) ii. The main

[1] System of National Accounts, 2008. United Nations, European Commission, International Monetary Fund, Organisation for Economic Co-operation and Development and World Bank (2009). Sales No. E.08.XVII.29. Available from http://unstats.un.org/unsd/nationalaccount/docs/SNA2008.pdf.

[2] E/2025/xx-E/CN.3/2025/xx, decision 56/101

foundations (chapters 4 – 6) iii. Structure of the framework and the sequence of economic accounts (chapters 7 – 21) iv. Cross-cutting issues (chapter 22 – 27) v. Institutional units and sectors in more detail (chapters 28 – 33) vi. Extended and thematic accounts and tables (chapter 34 – 29) vii. Supplementary material (annexes 1 – 5, references and glossary). The numerical example presented in Annex 3 is also used in the tables throughout the text. The spreadsheet of the numerical example will be made available for download.

The 2025 SNA is to be made available in a digital format, as well as the traditional paper version.

B. New features of the System of National Accounts

The following distinction is applied consistently throughout the 2025 SNA:

- *Sequence of economic accounts*, which consists of the sequence of interconnected flow accounts linked to the different types of economic activity taking place within a given period of time, together with balance sheets that record the values of the stocks of assets and liabilities at the beginning and end of the period, compiled by institutional sector.
- *Integrated framework of national accounts*, which consists of the sequence of economic accounts, supply and use tables, labour market tables and the table on capital services.
- *System of National Accounts (SNA),* which refers to the whole set of standards, including extended/thematic accounts and supplementary items.

The key changes made in the 2025 SNA are summarized below, according to the following groupings: wellbeing and sustainability; globalization; digitalization, financial issues and other changes. For a comprehensive list of changes, see Annex 4 Changes from the 2008 System of National Accounts.

Wellbeing and sustainability

Net income measures are given more emphasis. In this respect, the volume change of net domestic product (NDP) is identified as the conceptually preferred measure of economic growth, not replacing but to be used alongside the volume change of gross domestic product (GDP).

Depletion is treated as a cost of production, alongside depreciation, in the calculation of net domestic product and other net measures.

Standard breakdowns for the household sector are included for (adjusted) disposable income, consumption, saving and wealth by income and wealth decile group. Alternative breakdowns by main source of income, by household type, by housing status and by age of the reference person are also recommended, as supplementary items.

A broader set of standard tables for labour input is provided in the form of labour market tables.

Thematic and/or extended accounts are described in the following areas: unpaid household service work, health, education and training, and human capital.

A “split asset” asset approach is adopted for natural resource assets where economic benefits are shared between the legal owner of the asset and the extractor.

Natural resources are identified as a separate category within the asset classification, and renewable energy resources are explicitly recognised.

Supplementary items are introduced in the financial accounts and balance sheets for environmental, social, and governance (ESG) and green finance related to sustaining or improving the condition of the environment or society or governance practices, with green finance a subset of ESG finance. Supplementary items are also introduced in the classification of non-financial assets to support analysis of the energy transition from the use of non-renewable to renewable energy sources.

Improved guidance on the accounting for biological resources and mineral and energy resources is provided.

Explicit guidance is provided on accounting for production of electricity and heating by households, for sale and for own final use.

The 2025 SNA strengthens the linkages with the System of Environmental Economic Accounting (SEEA) as an important framework that is complementary to and aligned with the SNA.

There are new chapters on: National accounts and measures of well-being and sustainability (chapter 2); Measuring well-being (chapter 34) and Measuring sustainability of well-being (chapter 35).

Globalization

Enhanced guidance is provided for recording the activities of multinational enterprises, including ownership of intellectual property products and global production arrangements such as factoryless goods production.

Breakdowns for the corporations sectors by foreign-controlled corporations, public corporations and national private corporations, are introduced as standard breakdowns. The 2025 SNA also recommends distinguishing national private corporations and public corporations that are part of domestic multinational enterprise groups.

For countries where the presence of special purpose entities is significant, a separate identification of such entities, as an "of which" item, is recommended as supplementary information.

The development of extended supply and use tables and estimates on trade in value added, as supplementary information, is encouraged.

There is a new chapter (chapter 23) dealing with globalization issues.

Digitalization

In the 2025 SNA, the information content of electronic data collected and used in production is included in the asset boundary, as a new asset category – data – under (produced) fixed assets.

Guidance is provided on the treatment of crypto assets and non-fungible tokens. In particular, crypto assets without a corresponding liability designed to act as a general medium of exchange, such as bitcoin, are treated as non-produced non-financial assets, classified as a separate category. Crypto assets with a corresponding liability are treated as financial instruments.

Guidance is provided on the treatment of artificial intelligence, cloud computing and digital intermediation platforms.

The compilation of thematic digital supply and use tables is encouraged, including extended accounting for "free" digital products.

Further breakdowns of sectors, for activities related to financial technology (fintech), are recommended as supplementary items for countries where these activities are significant.

The 2025 SNA contains a new chapter (chapter 22) dealing with digitalization issues.

Financial issues

To arrive at an improved picture of financial risks and vulnerabilities, the 2025 SNA recommends more detailed breakdowns of the financial corporations sector and additional granularity for specific financial instruments. Guidance has also been provided on delineating additional subsectors and instruments, as supplementary items, where their separate identification is relevant.

The 2025 SNA includes three breakdowns of financial derivatives: (a) by market risk – as a standard breakdown; (b) by instrument – as a supplementary breakdown; and (c) by trading venue – as a supplementary breakdown. In addition, the usefulness of having information on the currency composition of notional values of derivatives linked to foreign currencies is noted.

Enhanced guidance is provided on trusts and similar arrangements, including specific recommendations on the treatment of real estate investment trusts.

Several enhancements have been made to the accounting for insurance and pensions.

In addition to the supplementary table in the 2008 SNA showing the amount of pension entitlements for all pension

schemes, whether included in, or excluded from, the sequence of economic accounts, the 2025 SNA recommends a supplementary table on household retirement resources.

Explicit guidance is introduced for compiling, as supplementary items, stocks of debt securities at nominal value for liability positions, including their reconciliation with the corresponding entries at market value in the balance sheets.

There is an enhanced focus on "from-whom-to-whom tables", as supplementary tables, which show financial and related flows between sectors of the economy and with the rest-of-the-world.

The 2025 SNA contains a new chapter (chapter 29) on the financial corporations to provide enhanced guidance about this sector.

The 2025 SNA contains a new chapter (chapter 26) dealing with Islamic finance.

Other changes

There is now consistency in the valuation of output when using the sum-of-costs approach in the absence of observable exchange values. In particular, a return to capital used in production is now also included in the value of output for non-market producers such as governments.

All central bank output is now considered as non-market and consumed by the central bank. Payments by banks and other financial corporations related to regulatory services are now treated as current transfers and not as payments for services.

A transfer element for concessional lending is only recorded in the sequence of economic accounts in the case of concessional loans provided by employers to employees. Information on concessional lending by government and international organizations is recommended as supplementary items.

Enhanced guidance is provided on the recording of public-private partnerships.

Enhanced guidance on regional accounts, sub-annual accounts and time series dimension of national accounting is provided.

Supplementary tables on provisions have been introduced.

Recording of reinvested earnings as income is encouraged as supplementary items for equity in all corporations, and not just foreign direct investment.

Chapter 39 on the informal economy improves the alignment with the latest resolutions on the informal economy endorsed by the International Conference of Labour Statisticians (ICLS).

Several terms have been changed to assist in better communication; for example, "consumption of fixed capital "is now known as "depreciation; "financial services indirectly measured" is now known as "implicit financial services on loans and deposits"; and "compensation of employees" is now known "remuneration of employees".

The 2025 SNA contains a new chapter (chapter 21) on communicating macro-economic statistics.

The 2025 SNA contains an annex (annex 1) on international standards for macro-economic statistics, and the links with the SNA.

C. Acknowledgements

The agile process leading to the development of the 2025 SNA involved active engagement with the global statistical community, ensuring inclusive contributions and a transparent review. The recommendations for changing and clarifying the 2008 SNA have arrived at after substantial technical research and a broad consultation. The update was notable for being country and user-centric, ensuring coordination across various statistical domains, and advancing a statistical measurement framework in support of sustainable development.

The updating of the 2008 SNA followed a three-pronged approach: (a) undertaking technical research on prioritized and other national accounts issues, including better supporting sustainable development from a macroeconomic perspective; (b) engaging in a broad consultation on the issues relating to the thematic areas of globalization,

digitalization, and well-being and sustainability, communication; financial and payments systems, the informal economy, and Islamic finance; and (c) ensuring overall consistency with the system of economic statistics.

Specifically, it involved six steps:

i. identifying and obtaining agreement on the issues to be considered during the update based on the SNA Research agenda (2018-2020);

ii. researching into these issues and presenting initial proposals for change to the 2008 SNA; (2020-2023);

iii. reviewing of the proposals by experts and agreeing on provisional recommendations (2020–2023);

iv. consulting with countries, users and stakeholders on the proposed recommendations (2022 -2024);

v. presenting the consolidated list of recommendations to the Statistical Commission in 2024 for endorsement; and

vi. incorporating the agreed recommendations into the text of the 2025 SNA followed by a global consultation on the draft chapters (2024) and final approval by the Statistical Commission (2025).

The update process involved the ISWGNA and AEG; other international, regional and non-governmental organizations; project staff; agencies responsible for compiling official statistics in many countries; task teams; and individual experts in national accounting and related fields from all regions of the world. As could be expected of a product of such a complex and sustained process, the 2025 SNA reflects many diverse contributions.

The ISWGNA and project staff

The ISWGNA managed and coordinated the process at the request of the Statistical Commission, similarly to what happened for the *2008 SNA*. The ISWGNA member organizations' contributions were in cash and in kind. At the senior level, the representatives were:

- Mariana Kotzeva, Eurostat
- Louis Marc Ducharme and Albert Kroese, IMF
- Paul Schreyer and Steve MacFeely, OECD
- Stefan Schweinfest, UNSD
- Haishan Fu, World Bank

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- Eurostat: John Verrinder and Nicola Massarelli
- IMF: Erich Strassner, Jennifer Ribarsky, Michael Stanger and Jim Tebrake
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- UNSD: Herman Smith, Benson Sim, Hernan Hernandez Martinez, Jonathan Gessendorfer, and Edem Kossi Kludza
- World Bank: Catherine Van Rompaey, Eric Roland Metreau, Jose Pablo Valdez Martinez, and Katheryn Young

Other staff members of the ISWGNA organizations who contributed substantively were:

- Eurostat: Andreas Dollt, Giuliano Amerini, and Louis Be Duc
- IMF: Thomas Alexander, Francien Berry, Emmanuel Manolikakis, Margarita Martins, Lisbeth Rivas, and Richard Wild
- OECD: Nadim Ahmad
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- World Bank: Grzegorz Peszco and Marko Rissanen

The National Accounts Section of the United Nations Statistics Division under the leadership of Herman Smith served as the Secretariat to ISWGNA. They developed and maintained the update website (Towards the 2025 SNA) which contains all information about the process, the development and final adoption of the 2025 SNA by the United Nations Statistical Commission. The Regional commissions of the United Nations were instrumental in ensuring wide contributions from their respective regions. At technical level they were represented by: Xiaoning Gong, David Boko, Emmanuel Ngok, Ali Yedan, Issoufou Seidou Sanda, Leandre Foster Ngogang Wandji and Elias Fesseha (United Nations Economic Commission for Africa (ECA)); Tihomira Dimova, Rami Peltola, Carsten Boldsen, Oleksandr Svirchevskyy, Stela Derivolcov and Evita Sisene (United Nations Economic Commission for Europe (ECE)); Wafa Abou Hosn, Omar Hakouz and Majed Skaini (United Nations Economic and Social Commission for Western Asia (ESCWA)); Rikke Munk Hansen, Alick Nyasulu, and Anne Kerdlapphon (United Nations Economic and Social Commission for Asia and the Pacific (ESCAP)); Claudia Andrea Decamino, Federico Dorin, and Patricia Marchant (United Nations Economic Commission for Latin America and the Caribbean (ECLAC)).

Project Management team

The project management team comprised Peter Harper, Project Manager; Peter van de Ven, Lead editor; supporting editors: Sanjiv Mahajan, Brent Moulton, Carl Obst, Patrick O'Hagan and Marshall Reinsdorf; and Herman Smith facilitating the coordination of the project team. The SNA project management team worked closely with the BPM project management team, to ensure full coherence between the 2025 SNA and the BPM7. Carlos Sánchez-Muñoz served as the BPM project manager, Kristy Howell and Maria Borga, as alternate project managers; and Venkat Josyula and Jannick Damgaard as lead editors; supported by Evrim Bese Goksu, Joji Ishikawa, Wilson Phiri and Patrick Quill.

The Advisory Expert Group

The AEG was initially established in 2003 to assist the ISWGNA with the update of the 1993 SNA. At its forty-first session in 2010 the Statistical Commission re-established the AEG to assist the ISWGNA in resolving issues on the research agenda of the SNA and emerging research issues, and to support the ISWGNA in the review of the SNA implementation programme. The composition of the AEG reflects the global community representing all regions of the world. The following were members of the AEG that contributed over the course of the SNA update:

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Notes

1. System of National Accounts, 2008. United Nations, European Commission, International Monetary Fund, Organisation for Economic Co-operation and Development and World Bank (2009). Sales No. E.08.XVII.29. Available from http://unstats.un.org/unsd/nationalaccount/docs/SNA2008.pdf.

2. See the report of the 56th session of the Statistical Commission (document E/2025/xx and E/CN.3/2025/xx, decision 56/101) at …..

List of Abbreviations and acronyms

AMNE	Activities of Multinational Enterprises
BIS	Bank of International Settlement
BIS	Bank for International Settlements
BOOT	Build-Own-Operate-Transfer Schemes
BOOTs	Build-Own-Operate-Transfer schemes
BOP	Balance of Payments
BOTs	Build-Operate-Transfer schemes
BPM	Balance of Payments and International Investment Position Manual
CAR	Country aggregation with redistribution (CAR) procedure
CBDCs	Central Bank digital currencies
CIF	Cost, insurance and freight
COFOG	Classification of the Functions of Government
COICOP	Classification of Individual Consumption by Purpose
COPNI	Classification of the Purpose of Non-profit Institutions Serving Households
COPP	Classification of outlays of producers by purpose
COVID-19	Coronavirus disease 2019
CPC	Central Product Classification
CPI	Consumer price index
CUCB	Currency union central bank
DBFOs	Design-Build-Finance-Operate schemes
DBMS	database management system
DBMS	database management system
DBOs	Design-Build-Operate schemes
DLT	Distributed ledger technology
EBOPS	Extended Balance of Payments Statistics
ECB	European Central Bank
EEZ	Exclusive economic zone
e-GDDS	Enhanced General Data Dissemination System
EGSS	Environmental goods and services sector
EPEA	Environmental protection expenditure accounts
ESG	Environmental, Social, Governance
ESG	Environmental, Social, Governance
ESO	Employee stock option
ESUT	Extended supply and use table
ETA	Estate, trust and agency account
EU	European Union
Eurostat	Statistical Office of the European Union
FATS	Foreign Affiliate Trade Statistic
FDIR	Framework of Direct Investment Relationship
FGP	Factoryless goods producer
FOB	Free on board

FPIs	For profit institutions
FRA	Forward rate agreements
FWTW	From-whom-to-whom
GAAP	Generally Accepted Accounting Principles
GCL	Global core list
GDP	Gross Domestic Product
GDPR	General Data Protection Regulation
GEKS	Gini-Éltető-Köves-Szulc (GEKS) method
GFCF	Gross fixed capital formation
GFS	Government Finance Statistics
GFSM	Government Finance Statistics Manual
GHG	Greenhouse gas
GNDI	Gross National Disposable Income
GNI	Gross national income
GVA	Gross Value Added
GVC	Global value chain
HDI	Household disposable income
HS	Harmonized commodity description and coding System
IAS	International Accounting Standards
IASB	International Accounting Standards Board
ICLS	International Conference of Labour Statisticians
ICP	International Comparison Program
ICPF	Insurance corporations and pension funds
IC	Insurance corporations
ICSE-18	International Classification of Status in Employment
ICT	information, communication and telecommunications
IFRS	International Financial Reporting Standards
IIP	International investment position
ILO	International Labour Organization
IMF	International Monetary Fund
IMTS	International merchandise trade statistics
IPSAS	International Public Sector Accounting Standards
IPSASB	International Public Sector Accounting Standards Board
ISCO	International Standard Classification of Occupations
ISIC	International Standard Industrial Classification of All Economic Activities
KAU	Kind-of-activity unit
KLEMS	Capital (K), labour (L), energy (E), materials (M) and purchased services (S)
LTC	Long-term care
MBS	Mortgage-backed securities
MFP	Multifactor productivity
MFS	Monetary and financial statistic
MFSMCG	Monetary and financial statistic manual and compilation guide
MMF	Money market fund

MNE	Multi-national enterprise
NBFI	Non-bank financial intermediation
NDP	Net Domestic Product
NFT	Non-fungible tokens
NNDI	Net national disposable income
NNI	Net national income
NPI	Non-profit institution
NPISH	Non-profit institution serving households
NSDP	National Summary Data Page
NUTS	Nomenclature of Territorial Units for Statistics
OECD	Organisation for Economic Cooperation and Development
OFI	Other financial intermediaries
P/B	Price to book value
PAF	Productivity Adjustment Factor
PAYE	Pay-as-you-earn
PFI	Private Finance Initiative
PFI	private finance initiative
PFs	Pension funds
PIM	Perpetual inventory method
PLI	Price level index
PPI	Producer price index
PPP	Purchasing power parity
PPP	Public-private partnerships
PSUT	Physical supply and use tables
R&D	Research and development
Repos	Repurchase agreements
SDDS	Special Data Dissemination Standard
SDGs	Sustainable Development Goals
SDMX	Statistical Data and Metadata eXchange
SDR	Special Drawing Right
SEEA	System of Environmental-Economic Accounting
SITC	Standard International Trade Classification
SNA	System of National Accounts
SPE	Special purpose entity
SPO	Second Party Opinion
SPVs	Special purpose vehicles
SUT	Supply and use table
SWF	Sovereign wealth fund
TEC	Trade-by-enterprise characteristic
TFP	Total factor productivity
TiVA	Trade in Value Added
UJVs	Unincorporated joint venture
UN	United Nations
UNDP	United Nations Development Programme

UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNSC	United Nations Statistical Commission
VAT	Value added tax
XMPI	Export and import price indices

A. Introduction and overview

Chapter 1: Introduction

A. Chapter Overview

1.1 This chapter introduces the System of National Accounts (SNA). The next section (Section B) answers the question "What is the SNA?" Section C summarizes the conceptual elements of the integrated framework if national accounts. Section D discusses issues associated with gross and net measurement of certain aggregates such as domestic product. Section E describes the main identities that can be derived from the integrated framework of national accounts. Section F summarizes the uses of the integrated framework of national accounts. Section G describes the boundaries of the integrated framework of national accounts. The SNA as a coordinating framework for statistics is described in Section H, and Section I discusses the links with business accounting. Section J outlines how the scope of the integrated framework of national accounts can be expanded.

1.2 The chapter concludes with a Readers Guide to the SNA (Section K), which should be particularly useful for readers who are less familiar with the structure of the SNA.

B. What is the System of National Accounts?

1.3 The System of National Accounts (SNA) is the internationally agreed standard set of recommendations on how to compile measures of economic activity in accordance with strict accounting conventions based on economic principles. The recommendations are expressed in terms of a set of concepts, definitions, classifications and accounting rules that comprise the internationally agreed standard for measuring such items as gross domestic product (GDP), the most frequently quoted indicator of economic performance. The accounting framework of the SNA allows economic data to be compiled and presented in a format that is designed for purposes of economic analysis, decision-taking and policymaking. The accounts themselves present in a condensed way a great mass of detailed information, organized according to economic principles and perceptions, about the working of an economy. They provide a comprehensive and detailed record of the complex economic activities taking place within an economy and of the interaction between the different economic agents, and groups of agents, that takes place on markets or elsewhere. The framework of the SNA provides accounts that are:

a. comprehensive, in that all designated activities and the consequences for all agents in an economy are covered;

b. consistent, because identical values are used to establish the consequences of a single action on all parties concerned using the same accounting rules;

c. integrated, in that all the consequences of a single action by one agent are necessarily reflected in the resulting accounts, including the impact on measurement of wealth captured in balance sheets.

1.4 The accounts of the SNA provide more than a snapshot of the economy at a point in time, since in practice the accounts are compiled for a succession of time periods, thus providing a continuing flow of information that is indispensable for the monitoring, analysis and evaluation of the performance of an economy over time. The SNA provides information not only about economic activities taking place within a period but also about the levels of an economy's assets and liabilities, and thus the wealth of its inhabitants, at particular points of time. In addition, the SNA includes an external account that displays the links between an economy and the rest of the world.

1.5 Certain key aggregate statistics, such as GDP, that are widely used as indicators of economic activity at the level of the total economy, are defined within the SNA, but the calculation of such aggregates has long ceased to be the primary purpose for compiling the accounts. In order to understand the workings of the economy, it is essential to be able to observe and analyse the economic interactions taking place between different sectors of the economy. The SNA is designed to be implemented at different levels of aggregation: at the level of individual economic agents, or institutional units as they are called in the SNA; for groups of such units, or institutional sectors; or at the level of the total economy.

1.6 As well as providing information in nominal terms, the SNA enables the compilation of volume measures, which are measures that remove the impact of price changes by expressing data on goods and services in prices of a certain reference period. These measures are important in analysing underlying economic activity. Complementing volume measures are measures of price change in the form of price indices, which are also an essential part of the SNA. These assist in the analysis of inflation, and can also be used to derive various 'real' measures in the SNA such as real income.

1.7 The SNA is designed for economic analysis, decision-taking and policymaking, whatever the industrial structure or stage of economic development reached by a country. The basic concepts and definitions of the SNA depend upon economic reasoning and principles which should be universally valid and invariant to the particular economic circumstances in which they are applied. Similarly, the classifications and accounting rules are meant to be universally applicable. There is no justification, for example, for seeking to define parts of the SNA differently in less developed than in more developed economies, or in large relatively closed economies than in small open economies, or in high-inflation economies than in low-inflation economies. Certain definitions, or accounting rules, specified in the SNA might become superfluous in certain circumstances (for example, if there were no inflation), but it is nevertheless necessary for a general system to include definitions and rules covering as wide a range of circumstances as possible.

1.8 Some countries may be able, at least initially, to calculate only a small number of accounts and tables for the total economy with little or no disaggregation into sectors, but a reduced set of accounts or tables does not constitute an alternative system. It is not appropriate to try to lay down general priorities for data collection when economic circumstances may vary considerably from one country to another. In practice, priorities can only be established country by country by economic analysts or policymakers familiar with the particular economic situation, needs and problems of the individual countries in question. It is not useful, for example, to try to specify general priorities for developing countries when they constitute a very heterogeneous group of countries at a world level. Data priorities may vary as much between one developing country and another as between a developing and a developed country or indeed between two developed countries.

1. The SNA and measures of well-being

1.9 The institutionalization of economic data in decision making through the accounting structures provided by the SNA has established credible, comparable and authoritative measures of economic activity suitable for all countries. One effect of this institutionalization has been the wide-spread use of national accounts measures of economic activity, in particular GDP, as indicators of the general performance of a country including its people's well-being and standard of living. This has occurred notwithstanding the routine advice of compilers of national accounts that there are limitations in using GDP and similar measures of aggregate economic performance as measures of well-being, material or general.

1.10 However, the SNA can contribute to an understanding of well-being, and the sustainability of well-being, in two important ways. First, other than GDP, there is a very wide range of data and aggregate measures contained within the SNA's sequence of economic accounts (as described in paragraph 1.23) that can be used to inform discussion of (material) well-being and sustainability. These include measures such as net national income (NNI), net national saving, household disposable income (either adjusted or not adjusted for social transfers in kind) and household final consumption. Furthermore, the national level information presented in the sequence of economic accounts can be supplemented with data on the distribution of these economic measures across groups of economic units. This is especially relevant for the distribution of income, consumption, saving and wealth across groups of households.

1.11 Second, the integrated framework of national accounts can be adapted and extended to organize data on the environmental and social dimensions of (material) well-being and sustainability. Examples of these accounting-based approaches cover topics such as environmental stocks and flows, unpaid household service work, health care expenditure, education and training.

1.12 Although the SNA can contribute significantly to the understanding of well-being and sustainability the SNA does not describe an overarching or inclusive framework for the integration of all aspects of well-being and sustainability. A comprehensive assessment of well-being and sustainability requires additional measures, for example, measures relating to safety and governance.

1.13 Chapter 2 provides further information on the important topic of the national accounts and measures of (material) well-being and sustainability.

C. The conceptual elements of the integrated framework of national accounts

1.14 The integrated framework of national accounts measures what takes place in the economy, between which agents, and for what purpose. At the heart of the integrated framework is the production of goods and services. These may be used for consumption in the period to which the accounts relate or may be accumulated for use in a later period. In simple terms, the amount of value added generated by production represents GDP. The income corresponding to GDP is distributed to the various agents or groups of agents as income and it is the process of distributing and redistributing income that allows one agent to consume the goods and services produced by another agent or to acquire goods and services for later consumption. The way in which the integrated framework of national accounts captures this pattern of economic flows is to identify the activities concerned by recognizing the institutional units in the economy and by specifying the structure of accounts capturing the transactions relevant to one stage or another of the process by which goods and services are produced and ultimately consumed. These concepts are sketched below and developed further in chapters 3 to 14.

1. Activities and transactions

1.15 The integrated framework of national accounts is designed to provide information about the behaviour of institutional units and the activities in which they engage, namely production, consumption and the accumulation of assets, in an analytically useful form. This is achieved by recording the exchange of goods, services and assets between institutional units in the form of transactions. At the same time, other transactions are recorded that represent the form of payment for the exchange which may be a good, service or asset of similar value but is often some form of financial claim including notes and coins.

1.16 Data on transactions provide the basic source material from which the values of the various elements in the accounts are built up or derived. The use of transactions data has important advantages. The first of these is that the prices at which goods and services are exchanged in transactions between buyers and sellers on markets provide the information needed for valuing, directly or indirectly, all the items in the accounts. Secondly, a transaction that takes place between two different institutional units has to be recorded for both parties to the transaction and therefore generally appears twice in a system of macroeconomic accounts. This enables important linkages to be established in the integrated framework of national accounts. For example, output is obtained by summing the amounts sold, bartered or transferred to other units plus the amounts entered into, less the amounts withdrawn from, inventories. In effect, the value of output is obtained by recording the various uses of that output by means of data on transactions. In this way, flows of goods and services can be traced through the economic system from their producers to their eventual users. Some transactions are only internal bookkeeping transactions that are needed when a single unit engages in two activities, such as the production and consumption of the same good or service, but the great majority of transactions takes place between different units on markets.

2. The institutional sectors of the economy

1.17 Two main kinds of institutional units, or transactors, are distinguished in the integrated framework of national accounts; households and legal entities. Legal entities are either entities created for purposes of production, mainly corporations and non-profit institutions (NPIs), or entities created by political processes, specifically government units. The defining characteristic of an institutional unit is that it is capable of owning goods and assets, typically being able to incur liabilities, and engaging in economic activities and transactions with other units in its own right.

1.18 For the purposes of the sequence of economic accounts, institutional units that are resident in the economy are grouped together into five mutually exclusive sectors composed of the following types of units:

a. Non-financial corporations;

b. Financial corporations;

c. General government (including social security funds);

d. Non-profit institutions serving households (NPISHs);

e. Households.

1.19 The five sectors together make up the total economy. Each sector may be further divided into subsectors; for example, the non-financial and financial corporations' sectors are divided to distinguish corporations subject to control by governments or foreign units from other corporations. The sequence of economic accounts makes provision for a complete set of flow accounts and balance sheets to be compiled for each sector, and subsector if desired, as well as for the total economy. The total number of accounts that may be compiled is therefore potentially quite large, depending upon the level of disaggregation that is required and feasible. Only by disaggregation into sectors and subsectors is it possible to observe the interactions between the different parts of the economy that need to be measured and analysed for purposes of policymaking.

1.20 Institutional units that are resident abroad form the rest of the world. The integrated framework of national accounts does not require accounts to be compiled in respect of economic activities taking place in the rest of the world, but all transactions between resident and non-resident units have to be recorded in order to obtain a complete accounting for the economic behaviour of resident units. Transactions between residents and non-residents are grouped together in a single account, the rest of the world account.

3. Accounts and their corresponding economic activities

1.21 This section gives a very brief summary of the integrated framework of the SNA. It is impossible to do justice to the wealth of information contained in the SNA in a short section of this kind, and reference should be made to chapter 3 on Overview of the integrated framework for a comprehensive overview.

The goods and services account

1.22 Fundamental to the SNA is the identity that goods and services produced in the economy must be consumed, used for capital formation or exported while all goods and services used within the economy must be produced in the economy or imported. From this, once suitable allowance is made for the effect on prices of taxes and subsidies on products, the goods and services account is derived and thence GDP.

The sequence of economic accounts

1.23 This basic identity is elaborated within the SNA into a sequence of interconnected flow accounts linked to different types of economic activity taking place within a given period of time, together with balance sheets that record the values of the stocks of assets and liabilities held by institutional units or sectors at the beginning and end of the period. Each flow relates to a particular kind of activity such as production, or the generation, distribution, redistribution or use of income. Each account shows the revenues of the institutional units and the expenditures made. An account is balanced by introducing a balancing item defined residually as the difference between the total revenues recorded on one side of the account and the total expenditures recorded on the other side. The balancing item from one account is carried forward as the first item in the following account, on the opposite side, thereby making the set of accounts an articulated whole. The balancing items are economic constructs of considerable interest and analytical significance. Examples of balancing items include value added, disposable income and saving. There is also a strong link between the flow accounts and the balance sheets, as all the changes occurring over time that affect the assets or liabilities held by institutional units or sectors are systematically recorded in one or another of the flow accounts.

1.24 The set of accounts just described is referred to as the "sequence of economic accounts" but it should be noted that, although it is necessary to present the accounts in a particular order, the activities they describe should not be interpreted as taking place sequentially in time. For example, incomes are generated

continuously by processes of production, while expenditures on the outputs produced may also be taking place more or less simultaneously. An economy is a general equilibrium system in which interdependent economic activities involving countless transactions between different institutional units are carried out simultaneously. Feedbacks are continually taking place from one type of economic activity to another.

Current accounts

1.25 The current accounts record the production of goods and services, the generation of incomes by production, the subsequent distribution and redistribution of incomes among institutional units, and the use of incomes for purposes of consumption or saving.

1.26 The production account records the activity of producing goods and services as defined within the integrated framework of national accounts. Its balancing item, gross value added, is defined as the value of output less the value of intermediate consumption and is a measure of the contribution to GDP made by an individual producer, industry or sector. Gross value added is the source from which the earned incomes of the integrated framework are generated, as recorded in the generation of earned income account, and is therefore carried forward into the allocation of earned income account. Value added and GDP may also be measured net by deducting depreciation, a figure representing the decline in value during the period of the fixed capital used in a production process, and the depletion of natural resources used in the production process. See section D below for more discussion on gross versus net measurement.

1.27 A set of articulated accounts shows how incomes are:

a. generated by production;

b. distributed to institutional units with claims on the value added created by production;

c. redistributed among institutional units, mainly by government units through taxes, social security contributions and benefits;

d. used by households, government units, the central bank or non-profit institutions serving households (NPISHs) for purposes of final consumption or saving;

e. available as saving for accumulating wealth.

1.28 The income accounts have considerable intrinsic economic interest in themselves. In particular, they are needed to explain the behaviour of institutional units as final consumers, that is, as users of the goods and services for the satisfaction of the individual and collective needs and wants of households and the community. The balancing item emerging from the complete set of income accounts is saving.

1.29 As the balancing item, saving is carried forward into the capital account, the first in the sequence of accumulation of assets accounts.

Accumulation of assets accounts

1.30 The accumulation of asset accounts are those that record flows that affect the entries in the balance sheets at the end of the accounting period. There are four accumulation of assets accounts; the capital account, the financial account, the other change in the volume of assets and liabilities account and the revaluation account.

a. The capital account records acquisitions and disposals of non-financial assets as a result of transactions with other units, internal bookkeeping transactions linked to production (such as changes in inventories, depreciation and depletion) and the redistribution of wealth by means of capital transfers.

b. The financial account records acquisitions and disposals of financial assets and liabilities, also as a result of transactions with other units.

c. The other changes in the volume of assets and liabilities account records changes in the amounts of the assets and liabilities held by institutional units or sectors as a result of factors other than transactions; for example, destruction of fixed assets by natural disasters.

d. The revaluation account records those changes in the values of assets and liabilities that result from changes in their prices.

1.31 The link between the accumulation of assets accounts and the current accounts is provided by the fact that, in general, saving must be used to acquire financial or non-financial assets of one kind or another, including cash. When saving is negative, the excess of consumption over disposable income must be financed by disposing of assets or incurring liabilities. The financial account shows the way in which funds are channelled from one group of units to another, especially through financial intermediaries. Access to finance is a prerequisite for engaging in many types of economic activities.

Balance sheets

1.32 The balance sheets show the values of the stocks of assets and liabilities held by institutional units or sectors at the beginning and end of an accounting period. As already noted, the values of the assets and liabilities held at any moment in time vary whenever any transactions, price changes or other changes affecting the volume of assets or liabilities held take place. These are all recorded in one or another of the accumulation of assets accounts so that the difference between the values in the opening and closing balance sheets is entirely accounted for within the sequence of economic accounts, provided that the assets and liabilities recorded in the balance sheets are valued consistently with the transactions and other changes.

Other tables of the integrated framework of national accounts

1.33 The integrated framework of national accounts is a rich and detailed economic accounting system that extends well beyond the sequence of economic accounts to encompass other accounts or tables that either contain information that cannot be included in the main accounts or present information in alternative ways, such as matrices, that may be more appropriate for certain types of analysis. It is not proposed to list all these various elements at this point, as they are described in chapter 3, but it is useful to draw attention to four specific elements which play a major role in the SNA.

Supply and use tables

1.34 In addition to the flow accounts and balance sheets described earlier, the integrated framework of the SNA also contains detailed supply and use tables in the form of matrices that record how supplies of different kinds of goods and services originate from domestic industries and imports and how those supplies are allocated between various intermediate or final uses, including exports. These tables involve the compilation of a set of integrated production and generation of earned income accounts for industries by drawing upon detailed data from industrial censuses, surveys and a variety of other source data. The supply and use tables provide an accounting framework within which the product flow method of compiling national accounts, whereby the total supplies and uses of individual types of goods and services have to be balanced with each other, can be systematically exploited. The supply and use tables also provide the basic information for the derivation of detailed input-output tables that may be used for purposes of economic analysis and projections. Supply and use tables are described in chapter 15.

Labour market tables

1.35 In productivity studies, data on the labour inputs used by each industry in the process of production are indispensable. For this purpose, and also other purposes, total hours worked is the preferred measure of labour inputs. Labour inputs can be measured in a number of ways. These measures are also highly relevant in their own right, and very useful for analysing trends and short-term developments in the labour market. The labour market tables, which are also part of the integrated framework of national accounts, provide a systematic overview of the various measures of labour input, consistent with the integrated framework of the SNA. Labour market tables are described in chapter 16 on Labour.

Capital services tables

1.36 Another important aspect of productivity studies, as well as an important factor of production, is capital services. Capital services are the sum of the net return to capital for non-financial assets used in production and depreciation (or depletion in the case of natural resources). Tables on capital services, including information on capital stocks, which are the stocks of assets from which capital services are derived, are also part of the integrated framework of national accounts. Capital services are described in chapter 17.

Accounts in volume terms

1.37 The integrated framework of the SNA also provides specific guidance about the methodology to be used to compile an integrated set of price and volume indices for flows of goods and services, gross and net value added and GDP that are consistent with the concepts and accounting principles of the integrated framework. It is recommended that annual chain indices should be used where possible.

1.38 Rates of inflation and economic growth appropriately measured by price and volume indices for the main aggregates of the integrated framework of national accounts are key variables both for the evaluation of past economic performance and as targets for the formulation of economic policymaking. They are an essential part of the SNA when any amount of inflation appears and become increasingly important as inflation increases. The integrated framework of the SNA also recognizes that the growth in the volume of GDP and the growth of an economy's real income are not the same because of trading gains or losses resulting from changes in international terms of trade. Accounts in volume terms are described in chapter 18 on Measuring prices, volumes and productivity.

D. Gross and net measurement

1.39 The role and prominent use of GDP and other gross measures has been well established in the integrated framework of national accounts. However, net measures, where depreciation and depletion are deducted from the corresponding gross measures, can also be derived. Examples include net domestic product (NDP) and net national income (NNI). Historically, mainly due to difficulties in compiling estimates of depreciation, these net measures have either not been compiled or have been assigned a lesser status. However, with the increased focus on (material) well-being and sustainability, it is increasingly recognized that net measures, which are more reflective of the actual costs borne in production, are conceptually superior to their gross counterparts. Furthermore, in recent years, there has been greater attention paid to improving measures of depreciation, including comparability across countries, through such initiatives as Measuring Capital – OECD Manual 2009.

1.40 For these reasons, compilers of national accounts statistics are encouraged to give greater focus to the compilation of net measures. They are encouraged to present these measures alongside the traditional gross measures, not as a replacement for these measures but to complement them, in order to provide a valuable tool for analysing issues relating to (material) well-being and sustainability. The compilation of net income measures is particularly encouraged.

E. The main aggregates of the integrated framework of national accounts

1.41 A number of identities, which provide insight into particular aspects of the economy, can be derived from the integrated framework of national accounts. This section summarizes the main ones. Further information on identities in the integrated framework of the SNA is provided in the chapter 3 on Overview of the integrated framework, the chapters describing the various accounts that make up the sequence of economic accounts, and chapter 19 on Summarizing, integrating and balancing the accounts.

1.42 As mentioned in paragraph 1.14, the most important aggregate in the integrated framework of the SNA relates to the domestic production of goods and services. Historically, GDP has been the key measure of domestic production; however as discussed above, NDP, which is equal to GDP less depreciation and depletion, is conceptually superior, and countries are encouraged to compile estimates of NDP to complement GDP.

1.43 GDP can be derived directly from the production account as the value of output less intermediate consumption plus any taxes less subsidies on products not included in the value of output. GDP represents the sum of the value added of all domestic producers. As explained in paragraphs 19.47 and 19.48, GDP can also be derived from expenditures in an economy, or from the generation of earned income.

1.44 The concept of income is another important aspect of the integrated framework of the SNA. As well as income earned from domestic production, an economy may also receive income from the rest of the world. On the other hand, some of the income earned from domestic production may be payable to the rest of the world. Hence, gross national income (GNI) equals GDP plus earned income receivable from the rest of the world less earned income payable to the rest of the world. Net National Income (NNI) is calculated using a similar formula to that used to calculate GNI, with NDP replacing GDP. In other words, NNI equals GNI less depreciation and depletion. GNI/NNI can be adjusted by adding current transfers receivable from abroad and deducting current transfers payable abroad to derive measures of gross and net national disposable income (GNDI/NNDI).

1.45 An economy's disposable income is used to fund its consumption. After adjusting for changes in pension entitlements and some other non-pension entitlements related to social insurance, any amounts left over represent saving. Accordingly, gross national saving is equal to GNDI less final consumption and the adjustment for pension and non-pension entitlements, and net national saving is equal to NNDI less final consumption.

1.46 An economy's saving can be used to fund the acquisition of non-financial assets. What is left over is generally available to be lent in the form of acquiring financial assets or reducing financial liabilities. If an economy's acquisition of non-financial assets is greater than its saving, it will generally be a net borrower and it will need to incur financial liabilities or reduce its financial assets. More formally, net lending/borrowing can be derived by deducting the acquisition less disposals of non-financial assets from saving, and adding capital transfers receivable less capital transfers payable from the rest of the world to saving. When net saving is used in the calculation, depreciation and depletion are added in as these are recorded as negative expenditures representing a source of funds for the acquisition of assets. Net lending/net borrowing can also be derived as the net acquisition of financial assets less the net incurrence of financial liabilities. The fact that net lending/borrowing can be derived in two ways is important in balancing the accounts, as described in chapter 19 on Summarizing, integrating and balancing the accounts.

1.47 Turning to balance sheets, the key identity is an economy's net worth, which is the value of its non-financial and financial assets less the value of its liabilities, noting that all liabilities recorded in the SNA are financial liabilities. The change in net worth between two points in time is equal to the sum of changes in net worth due to saving, changes in net worth due to capital transfers receivable from the rest of the world less capital transfers payable to the rest of the world, changes in net worth due to nominal holding gains and losses, and changes in net worth due to other changes in the volume of assets or liabilities during the period between the two points in time.

F. Uses of the integrated framework of the SNA

1.48 The main objective of the integrated framework of national accounts is to provide a comprehensive conceptual and accounting framework that can be used to create a macroeconomic database suitable for analysing and evaluating the performance of an economy. The existence of such a database is a prerequisite for informed, rational policymaking and decision-taking. Some of the more specific uses of the integrated framework are described in the following sections.

1. Monitoring the behaviour of the economy

1.49 Certain key aggregates of the integrated framework of national accounts, such as GDP and GDP per head of population, have acquired an identity of their own and are widely used by analysts, politicians, the press, the business community and the public at large as summary, global indicators of economic activity and (material) well-being. Movements of such aggregates, and their associated price and volume measures, are used to evaluate the overall performance of the economy and hence to judge the relative success or failure of

economic policies pursued by governments. Also, as mentioned above, aggregates such as NDP and NNI can provide valuable insights into material well-being and sustainability.

1.50 National accounts data provide information covering both different types of economic activities and the different sectors of the economy. It is possible to monitor the movements of major economic flows such as production, household consumption, government consumption, capital formation, exports, imports, etc., in both value and volume terms. Moreover, information is provided about certain key balancing items and ratios which can only be defined and measured within an accounting framework, for example, the government budget surplus or deficit, the share of income that is saved or invested by individual sectors of the economy or the economy as a whole, the external trade balance, etc. The integrated framework of the SNA also provides the background against which movements of short-term indicators, such as monthly indices of industrial production, consumer or producer prices can be interpreted and evaluated. The monitoring of the behaviour of the economy may be significantly improved if at least some of the main aggregates of the integrated framework are compiled quarterly as well as annually.

2. Macroeconomic analysis

1.51 National accounts are also used to investigate the causal mechanisms at work within an economy. Such analysis usually takes the form of the estimation of the parameters of functional relationships between different economic variables by applying econometric methods to time series of data in both value and volume terms compiled within a national accounting framework. The types of macroeconomic models used for such investigations may vary according to the school of economic thought of the investigator as well as the objectives of the analysis, but the SNA is sufficiently flexible to accommodate the requirements of different economic theories or models, provided only that they accept the basic concepts of production, consumption, income, etc. on which the SNA is based.

1.52 Economic policy in the short term is formulated on the basis of an assessment of the recent behaviour and current state of the economy and a view, or precise forecast, about likely future developments. Short-term forecasts are typically made using econometric models of the type just described. Over the medium- or long-term, economic policy has to be formulated in the context of a broad economic strategy.

1.53 Economic policymaking and decision-taking take place at all levels of government and also within public and private corporations. Large corporations such as multinationals have the ability to build their own macroeconomic models tailored to their own requirements, for which they need national accounts data. The investment programmes of major corporations must be based on long-term expectations about future economic developments that require national accounts data. There are also specialist agencies that provide forecasts for individual clients in return for fees. Such agencies typically require very detailed national accounts data.

3. International comparisons

1.54 The integrated framework of the SNA is used for international reporting of national accounts data that conform to standard, internationally accepted concepts, definitions and classifications. The resulting data are widely used for international comparisons of the volumes of major aggregates, such as GDP or GDP per head, and also for comparisons of structural statistics, such as ratios of investment, taxes or government expenditures to GDP. Such comparisons are used by economists, journalists or other analysts to evaluate the performance of one economy against that of other similar economies. They can influence popular and political judgements about the relative success of economic programmes in the same way as developments over time within a single country. Databases consisting of sets of national accounts for groups of countries can also be used for econometric analyses in which time-series and cross-section data are pooled to provide a broader range of observations for the estimation of functional relationships.

1.55 Levels of GDP or, alternatively, gross national income (GNI) per head in different countries are also used by international organizations to determine eligibility for loans, aid or other funds or to determine the terms or conditions on which such loans, aid or funds are made available. When the objective is to compare the volumes of goods or services produced or consumed per head, data in national currencies must be converted

into a common currency by means of purchasing power parities and not exchange rates. It is well known that, in general, neither market nor fixed exchange rates reflect the relative internal purchasing powers of different currencies. When exchange rates are used to convert GDP, or other statistics, into a common currency the prices at which goods and services in high-income countries are valued tend to be higher than in low-income countries, thus exaggerating the differences in real incomes between them. Exchange rate converted data must not, therefore, be interpreted as measures of the relative volumes of goods and services concerned. Levels of GDP, or GDP per head, in different countries are also used to determine, in whole or in part, the size of the contributions which the member countries of an international organization make to finance the operations of the organization.

1.56 Although international organizations use the SNA in order to be able to collect internationally comparable national accounts data, the SNA has not been created for this purpose. It has become the standard, or universal, system used with little or no modification by most countries in the world for their own national purposes. National statistical offices and government agencies have a strong vested interest in ensuring that the SNA meets their own analytic and policy requirements and have taken an active part in the development of the SNA for this reason.

G. The boundaries of the integrated framework of the SNA

1. Non-monetary transactions

1.57 When goods and services produced within the economy are sold in monetary transactions, their values are automatically included in the integrated framework of national accounts. Many goods or services are not actually sold but are nevertheless supplied to other units: for example, they may be bartered for other goods or services or provided free as transfers in kind. Such goods and services must be included in the accounts even though their values have to be estimated. The goods or services involved are produced by activities that are no different from those used to produce goods or services for sale. Moreover, the transactions in which the goods and services are supplied to other units are also proper transactions even though the producers do not receive money in exchange. It is misleading to describe such output as “imputed”. For example, the services of financial intermediaries which are measured indirectly in the integrated framework of the SNA do actually take place; but their values have to be measured indirectly. It is the value, not the transaction that is “imputed”.

1.58 When goods or services are retained for own use, no transactions with other units take place. In such cases, in order to be able to record the goods or services in the accounts, internal transactions have to be recorded whereby producers allocate the goods or services for their own consumption or capital formation and values also have to be estimated for them.

1.59 Thus, estimates and imputations are needed in order to be able to record in the accounts productive activities whose outputs are not disposed of in monetary transactions with other units. Such estimates and imputations should not be interpreted as introducing hypothetical activities or flows of goods and services into the integrated framework of the SNA. Their purpose is the opposite, namely, to capture in the accounts major flows of goods and services actually taking place in the economy that would otherwise be omitted. In order to obtain comprehensive measures, values have to be estimated for all outputs of goods and services that are not sold but disposed of in other ways.

1.60 In practice the integrated framework of the SNA does not record all outputs, however, because domestic and personal services produced and consumed by members of the same household are omitted. (However, as explained below, countries are encouraged to compile extended accounts on unpaid household service work.) Subject to this one major exception, GDP is intended to be a comprehensive measure of the total gross value added produced by all resident institutional units. GDP is confined to outputs produced by economic activities that are capable of being provided by one unit to another. Not all activities that require the expenditure of time and effort by persons are productive in an economic sense, for example, activities such as eating, drinking or sleeping cannot be produced by one person for the benefit of another.

2. The production boundary

1.61 The activity of production is fundamental. In the SNA, production is understood to be a physical process, carried out under the responsibility, control and management of an institutional unit, in which labour and assets are used to transform inputs of goods and services into outputs of other goods and services. All goods and services produced as outputs must be such that they can be sold on markets or at least be capable of being provided by one unit to another, with or without charge. The integrated framework of the SNA includes within the production boundary all production actually destined for the market, whether for sale or barter. It also includes all goods or services provided free to individual households or collectively to the community by government units or NPISHs.

Household production

1.62 The main problem for defining the range of activities recorded in the production accounts of the integrated framework of the SNA is to decide upon the treatment of activities that produce goods or services that could have been supplied to others on the market but are actually retained by their producers for their own use. These cover a very wide range of productive activities, in particular:

a. The production of agricultural goods by household enterprises for own final consumption;

b. The production of other goods for own final use by households: the construction of dwellings, the production of foodstuffs and clothing, etc.;

c. The production of housing services for own final consumption by owner occupiers;

d. The production of domestic and personal services for consumption within the same household: the preparation of meals, care and training of children, cleaning, repairs, etc.

All of these activities are productive in an economic sense. However, inclusion in the integrated framework of the SNA is not simply a matter of estimating monetary values for the outputs of these activities. If values are assigned to the outputs, values have also to be assigned to the incomes generated by their production and to the consumption of the output. It is clear that the economic significance of these flows is very different from that of monetary flows. For example, the incomes generated are automatically tied to the consumption of the goods and services produced; they have little relevance for the analysis of inflation or deflation or other disequilibria within the economy. The inclusion of large non-monetary flows of this kind in the integrated framework of national accounts together with monetary flows can obscure what is happening on markets and reduce the analytic usefulness of the data.

1.63 The integrated framework of the SNA is designed to meet a wide range of analytical and policy needs. A balance has to be struck between the desire for the accounts to be as comprehensive as possible and the need to prevent flows used for the analysis of market behaviour and disequilibria from being swamped by non-monetary values. The integrated framework therefore includes all production of goods for own use within its production boundary, as the decision whether goods are to be sold or retained for own use can be made even after they have been produced, but it excludes all production of services for own final consumption within households (except for the services produced by employing paid domestic staff and the own-account production of housing services by owner-occupiers). The services are excluded because the decision to consume them within the household is made even before the service is provided. The location of the production boundary in the integrated framework of the SNA is a compromise, but a deliberate one that takes account of the needs of most users.

1.64 The exclusion of unpaid household service work from the production boundary in the integrated framework is seen as a significant limitation in using GDP as a measure of material well-being since it omits a significant volume of production and consumption undertaken by households that relates directly to the health, education and general well-being of people. Given this limitation, countries are encouraged to develop extended accounts for unpaid household service work to provide important insights into (material) well-being and a range of data can be organized following accounting principles to support extended analysis. Unpaid household service work accounts are described in more detail in chapter 34 on Measuring well-being.

Other production boundary problems

1.65 Certain natural processes may or may not be counted as production in the integrated framework of the SNA depending upon the circumstances in which they occur. A necessary condition for an activity to be treated as productive is that it must be carried out under the instigation, control and responsibility of some institutional unit that exercises ownership rights over whatever is produced. For example, the natural growth of stocks of fish in the high seas not subject to international quotas is not counted as production: the process is not managed by any institutional unit and the fish do not belong to any institutional unit. On the other hand, the growth of fish in fish farms is treated as a process of production in much the same way that rearing livestock is a process of production. Similarly, the natural growth of non-cultivated forests or wild fruits or berries may not be counted as production, whereas the cultivation of crop-bearing trees, or trees grown for timber or other uses, is counted in the same way as the growing of annual crops. However, the deliberate felling of trees in completely non-cultivated forests, and the gathering of wild fruit or berries, and also firewood, counts as production. Similarly, rainfall and the flow of water down natural watercourses are not processes of production, whereas storing water in reservoirs or dams and the piping, or carrying, of water from one location to another all constitute production.

1.66 These examples show that many activities or processes that may be of benefit to institutional units, both as producers and consumers, are not processes of production in an economic sense. For example, rainfall and ecosystem services such as pollination may be vital to the agricultural production of a country but they are not processes of production whose output is explicitly recorded in GDP, notwithstanding that the outputs to which these processes contribute, such as crops, are recorded in GDP. As explained in chapter 35 on Measuring the sustainability of well-being, the compilation of complementary accounts covering ecosystem services according to SEEA Ecosystem Accounting is strongly encouraged.

3. The consumption boundary

1.67 The coverage of production in the integrated framework of the SNA has ramifications that extend considerably beyond the production account itself. The boundary of production determines the amount of value added recorded and hence the total amount of income generated by production. The range of goods and services that are included in household final consumption expenditures, and actual consumption, is similarly governed by the production boundary. For example, these expenditures include the estimated values of the agricultural products consumed by households that they have produced themselves and also the values of the housing services consumed by owner occupiers, but not the values of "do-it-yourself" repairs and maintenance to vehicles or household durables, the cleaning of dwellings, the care and training of children, or similar domestic or personal services produced for own final consumption. Only the expenditures on goods utilized for these purposes, such as cleaning materials, are included in household final consumption expenditures.

4. The asset boundary

1.68 Balance sheets are compiled for institutional units, or sectors, and record the values of the assets they own or the liabilities they have incurred. Assets as defined in the integrated framework of the SNA are items that must be owned by some unit, or units, and from which economic benefits are derived by their owner(s) by holding or using them over a period of time. Financial assets and fixed assets, such as machinery, equipment and structures which have themselves been produced as outputs in the past, are clearly covered by this definition. However, the ownership criterion is important for determining which natural resources are treated as assets in the integrated framework of the SNA. Natural resources such as land, mineral deposits, fuel reserves, renewable energy resources, forests or other vegetation and wild animals are included in the balance sheets provided that institutional units are exercising effective ownership rights over them, that is, are actually in a position to be able to benefit from them. Assets need not be privately owned and could be owned by government units exercising ownership rights on behalf of entire communities. Thus, many environmental assets are included within the integrated framework of the SNA. Resources such as the atmosphere or high seas, over which no ownership rights can be exercised, or mineral and energy resources that have not been discovered or that are technically or economically unworkable, as demonstrated by the absence of production

or the expectation of production via the granting of a lease to exploit the resources, are not included as they are not capable of bringing any economic benefits to their owners, given the technology and relative prices existing at the time. Ecosystem assets are also excluded from the asset boundary applied in the integrated framework of the SNA.

1.69 Changes in the values of natural resources owned by institutional units between one balance sheet and the next are recorded in the accumulation of assets accounts of the sequence of economic accounts. For example, the depletion of a natural resource as a result of its use in production is recorded in the capital account, together with the depreciation of fixed assets. On the other hand unpredictable losses of non-financial assets due to their destruction by natural disasters (floods, forest fires, hurricanes, earthquakes, etc.) are recorded in the other changes in the volume of assets and liabilities account. Also, the appearance of workable deposits or reserves of minerals or fuels as demonstrated by their use in production or their expected use via the granting of a lease for production are recorded in this account and they enter the balance sheets in this way.

5. National boundaries

1.70 The accounts of the SNA are compiled for resident institutional units grouped into institutional sectors and subsectors. The concept of residence is the same as that used in the *Balance of Payments and International Investment Position Manual, Seventh Edition (International Monetary Fund* (IMF), 2025), known as *BPM7*. An institutional unit is said to be resident within the economic territory of a country when it maintains a centre of predominant economic interest in that territory, that is, when it engages, or intends to engage, in economic activities or transactions on a significant scale either indefinitely or over a long period of time, usually interpreted as one year.

1.71 The GDP of a country, viewed as an aggregate measure of production, is equal to the sum of the gross value added of all resident institutional units engaged in production (plus any taxes, less any subsidies, on products not included in the value of their outputs). This is not exactly the same as the sum of the gross value added of all productive activities taking place within the geographical boundaries of the national economy. Some of the production of a resident institutional unit may take place abroad, for example, the installation of some exported machinery or equipment or a consultancy project undertaken by a team of expert advisers working temporarily abroad. Conversely, some of the production taking place within a country may be attributable to non-resident institutional units.

1.72 When GDP is derived from the expenditure side, allowance has also to be made for goods and services produced by non-residents but consumed by residents as well as for goods and services produced by residents but consumed abroad. For the integrated framework of the SNA to be comprehensive in coverage, all transactions with the rest of the world have to be identified, so their impact on measures relating to the resident economy is properly accounted for. The complete set of transactions with the rest of the world in the integrated framework of national accounts matches exactly the set of transactions captured in the balance of payments.

6. Final consumption, intermediate consumption and gross fixed capital formation

1.73 The contents of the accounts are determined not only by the conceptual framework, definitions and classifications of the SNA but also by the ways in which they are interpreted and implemented in practice. No matter how simple and precise concepts and classifications may appear in principle, there are inevitably difficult borderline cases which cannot easily be fitted into predetermined categories. These points may be illustrated by considering a fundamental distinction in economics and in the integrated framework of the SNA, namely, the distinction between consumption and gross fixed capital formation (or gross fixed investment, as it is often described in other contexts).

1.74 Before considering the difference between consumption and investment, though, it is necessary to look more closely at the nature of consumption. Consumption is an activity in which institutional units use up goods or services, but there are two quite different kinds of consumption. Intermediate consumption consists of goods and services used up in the course of production within the accounting period. Final consumption consists of goods and services used by individual households or the community to satisfy their individual or collective

needs or wants. The activity of gross fixed capital formation, like intermediate consumption, is restricted to institutional units in their capacity as producers, being defined as the value of their acquisitions less disposals of fixed assets. Fixed assets are produced assets (such as machinery, equipment, buildings or other structures) that are used repeatedly or continuously in production over several accounting periods (more than one year). The distinction between intermediate consumption and gross capital formation depends on whether the goods and services involved are expected to be completely used up within a year or not. If they are, the use of them is a current transaction recorded as intermediate consumption; if not it is an accumulation transaction recorded in the capital account.

1.75 The general nature and purpose of the distinction between gross fixed capital formation and consumption, whether intermediate or final, is clear. The distinction is fundamental for economic analysis and policymaking. Nevertheless, the borderline between consumption and gross fixed capital formation is not always easy to determine in practice. Certain activities contain some elements that appear to be consumption and at the same time others that appear to be capital formation. In order to try to ensure that the SNA is implemented in a uniform way, decisions have to be taken about the ways in which certain difficult, even controversial, items are to be classified. Two examples are given below.

Human capital

1.76 It is often proposed that expenditures on staff training and education should be classified as gross fixed capital formation as a form of investment in human capital. The acquisition of knowledge, skills and qualifications increases the productive potential of the individuals concerned and is a source of future economic benefit to them. However, while knowledge, skills and qualifications are clearly assets in a broad sense of the term, they cannot be equated with fixed assets as understood in the integrated framework of the SNA. They are acquired through learning, studying and practising, activities that cannot be undertaken by anyone else on behalf of the student and thus the acquisition of knowledge is not a process of production even though the instruction conveyed by education services is. The education services produced by schools, colleges, universities, etc. are thus treated as being consumed by students in the process of their acquiring knowledge and skills. This type of education is treated as final consumption. When training is given by an employer to enhance the effectiveness of staff, the costs are treated as intermediate consumption.

1.77 This treatment of education costs is consistent with the production and asset boundaries of the integrated framework of national accounts, but not all users of the SNA find it satisfactory in all instances. Accordingly, as described in chapter 35 on Measuring the sustainability of well-being, the compilation of thematic accounts on education and training is encouraged, as well as extended accounts that treat human capital as an asset. (Thematic and extended accounts are described in paragraph 1.101.)

Repairs, maintenance and gross fixed capital formation

1.78 Another, less familiar, example of the intrinsic difficulty of trying to draw a dichotomy between consumption and gross fixed capital formation is provided by repairs and maintenance. Ordinary maintenance and repairs undertaken by enterprises to keep fixed assets in good working order are treated as intermediate consumption. However, major improvements, additions or extensions to fixed assets, both machinery and structures, which improve their performance, increase their capacity or prolong their expected working lives count as gross fixed capital formation. In practice it is not easy to draw the line between ordinary repairs and major improvements, although the SNA provides certain recommendations for this purpose. Some analysts, however, consider that the distinction between ordinary repairs and maintenance and major improvements and additions is neither operational nor defensible and would favour a more “gross” method of recording in which all such activities are treated as gross fixed capital formation.

H. The SNA as a coordinating framework for statistics

1. Harmonization between different statistical systems

1.79 The SNA has a very important statistical function by serving as a coordinating framework for economic

statistics in two different senses. In the first place, the integrated framework of the SNA is seen as the conceptual framework for ensuring the consistency of the definitions and classifications used in different, but related, fields of statistics. Secondly, the integrated framework acts as an accounting framework to ensure the numerical consistency of data drawn from different sources, such as industrial inquiries, household surveys, merchandise trade statistics, VAT returns and other administrative sources.

1.80 Consistency between different statistical systems enhances the analytical usefulness of all the statistics involved. The SNA has always occupied a central position in economic statistics because the data from more specialized systems, such as balance of payments or labour force statistics, typically have to be used in conjunction with national accounts data. The need for harmonisation of the SNA and related statistical systems, such as financial statistics or balance of payments statistics, leads to the practice of revising other statistical systems in parallel with, and in close collaboration with, that of the SNA. This coordination eliminates conceptual differences between them other than a few exceptions that can be specifically justified in terms of the special characteristics of different kinds of data, or the special requirements of different kinds of users. Harmonization between the SNA and other major systems has proved to be largely successful and has been achieved by making changes to the SNA as well as to the other systems.

1.81 The other major macroeconomic statistical standards that complement the SNA include:

- The IMF's *Balance of Payments and International Investment Position Manual Seventh Edition (BPM7) 2025*, which serves as the standard framework for statistics on the transactions and positions between an economy and the rest of the world and facilitates analysis of balance of payments and related issues. Further information on the *BPM* is provided in chapter 33 on Transactions and positions between residents and non-residents.
- The IMF's *Government Finance Statistics Manual (GFSM) 2014*, which describes the government finance statistics (*GFS*) framework, designed to support fiscal analysis. Further information on the *GFSM* is provided in chapter 30 on General government and the public sector.
- The IMF's *Monetary and Financial Statistics Manual and Compilation Guide (MFSMCG) 2016*, which provides guidelines for the compilation and presentation of monetary statistics within a financial statistics framework, as a critical input for monetary policy formulation and monitoring. Further information on the *MFSMCG* is provided in chapter 29 on Financial corporations.
- The United Nations et al *System of Environmental-Economic Accounting 2012 Central Framework (SEEA Central Framework)*, which is a multipurpose conceptual framework that describes the interactions between the economy and the environment, and the stocks and changes in stocks of environmental assets. The *SEEA Central Framework* is complemented by the *SEEA Ecosystem Accounting* , which provides an integrated and comprehensive statistical framework for organizing data about habitats and landscapes, measuring the ecosystem services, tracking changes in ecosystem assets, and linking this information to economic and other human activity. Further information on *SEEA Central Framework* and *SEEA Ecosystem Accounting* is provided in chapter 35 on Measuring the sustainability of well-being.

1.82 Annex 1 provides a consolidated description of the macroeconomic statistics that are related to the SNA.

2. The use of micro data for macroeconomic accounting

1.83 The sequence of economic accounts could, in principle, be compiled at any level of aggregation, even that of an individual institutional unit. It might therefore appear desirable if the macroeconomic accounts for sectors or the total economy could be obtained directly by aggregating corresponding data for individual units. There would be considerable analytical advantages in having micro databases that are fully compatible with the corresponding macroeconomic accounts for sectors or the total economy. Data in the form of aggregates, or averages, often conceal a great deal of useful information about changes occurring within the populations to which they relate. For example, economic theory indicates that changes in the pattern of the distribution of income may be expected to have an impact on aggregate consumption over and above that due to changes in the aggregate level of income. Information relating to individual units may be needed not only to obtain a better understanding of the working of the economy but also to monitor the impact of government policies,

or other events, on selected types of units about which there may be special concern, such as households with very low incomes. Micro data sets also make it possible to follow the behaviour of individual units over time. Given the continuing improvements in computers and communications, the management and analysis of very large micro databases is becoming progressively easier. Data can be derived from a variety of different sources, such as administrative and business records, as well as specially conducted censuses and surveys.

1.84 In practice, however, macroeconomic accounts can seldom be built up by simply aggregating the relevant micro data. Even when individual institutional units keep accounts or records, the concepts that are needed or appropriate at a micro level may not be suitable at a macro level. Individual units may be obliged to use concepts designed for other purposes, such as taxation. The accounting conventions and valuation methods used at a micro level typically differ from those required by the SNA. For example, the widespread use of historic cost accounting means that the accounts of individual enterprises may differ significantly from those used in the SNA. Depreciation as calculated for tax purposes may be quite arbitrary and unacceptable from an economic viewpoint as a measure of depreciation for national accounting purposes. In such situations, it is impractical to try to adjust the individual accounts of thousands of enterprises before aggregating them. Instead the data are adjusted after they have been aggregated to some extent. Of course, the data do not have to be aggregated to the level of the total economy, or even complete sectors or industries, before being adjusted and it is likely to be more efficient to make the adjustments for smaller and more homogenous groups of units. This may involve compiling so-called intermediate systems of accounts. At whatever level of aggregation the adjustments are made, the inevitable consequence is to make the resulting macro data no longer equivalent to simple aggregations of the micro data from which they are derived. When the micro data are not derived from business accounts or administrative records but from censuses or surveys designed for statistical purposes, the concepts used should be closer to those required, but the results may still require adjustment at a macro level because of incomplete coverage (the surveys being confined to enterprises above a certain size, for example) and bias from response errors.

1.85 Most households are unlikely to keep accounts of the kind needed by the SNA. Because of this, when micro data for households are derived from sample surveys, they may be subject to significant response and reporting errors. It may be particularly difficult to obtain reliable and meaningful data about the activities of small unincorporated enterprises owned by households. Aggregates based on household surveys have to be adjusted for certain typical biases, such as the underreporting of certain types of expenditure (on tobacco, alcoholic drink, gambling, etc.) and also to make them consistent with macro data from other sources, such as imports. The systematic exploitation of micro data may also be restricted by the increasing concerns about confidentiality and possible misuse of such databases.

1.86 It may be concluded therefore that, for various reasons, it may be difficult, if not impossible, to achieve micro databases and macroeconomic accounts that are fully compatible with each other in practice. Nevertheless, as a general objective, the concepts, definitions and classifications used in economic accounting should, so far as possible, be the same at both a micro and macro level to facilitate the interface between the two kinds of data. Tables that reconcile the differences between micro and macro statistics, including any adjustments made to the micro data, should be produced.

I. Links with business accounting

1.87 The accounting rules and procedures used in the sequence of economic accounts are based on those long used in business accounting. The traditional double-entry bookkeeping principle, whereby a transaction gives rise to a pair of matching debit and credit entries within the accounts of each of the two parties to the transaction, is a basic axiom of economic or national accounting. For example, recording the sale of output requires not only an entry in the production account of the seller but also an entry of equal value, often described as the counterpart, in the seller's financial account to record the cash, or short-term financial credit, received in exchange for the output sold. As two matching entries are also needed for the buyer, the transaction must give rise to four simultaneous entries of equal value in a system of macroeconomic accounts covering both the seller and the buyer. In general, a transaction between two different institutional units always requires four equal, simultaneous entries in the sequence of economic accounts of the SNA (that is, quadruple entry accounting) even if the transaction is a transfer and not an exchange and even if no money changes hands. These multiple entries enable the economic interactions between different institutional units and sectors to

be recorded and analysed. However, transactions within a single unit (such as the consumption of output by the same unit that produced it) require only two entries whose values have to be estimated.

1.88 The design and structure of the integrated framework of national accounts draws heavily on economic theory and principles as well as business accounting practices. Basic concepts such as production, consumption and capital formation are meant to be rooted in economic theory. When business accounting practices conflict with economic principles, priority is given to the latter, as the SNA is designed primarily for purposes of economic analysis and policymaking. The difference between business accounting and economic theory can be illustrated by the concept of cost of production used in the integrated framework if the SNA.

1.89 Business accounts commonly (but not invariably) record costs on an historic basis, partly to ensure that they are completely objective. Historic cost accounting requires goods or assets used in production to be valued by the expenditures actually incurred to acquire those goods or assets, however far back in the past those expenditures took place. In the integrated framework of national accounts, however, the concept of opportunity cost as defined in economics is employed. In other words, the cost of using, or using up, some existing asset or good in one particular process of production is measured by the amount of the economic benefits that could have been secured by using the asset or good in alternative ways. Opportunity cost is calculated with reference to the opportunities foregone at the time the asset or resource is used, as distinct from the costs incurred at some time in the past to acquire the asset. The best practical approximation to opportunity cost accounting is current cost accounting, whereby assets and goods used in production are valued at their actual or estimated current exchange prices at the time the production takes place. Current cost accounting is sometimes described as replacement cost accounting, although there may be no intention of actually replacing the asset in question after it has been used.

1.90 When there is persistent inflation, even at moderate levels, the use of historic costs tends to underestimate the opportunity costs of production in an economic sense so that historic cost operating profit may be much greater than the operating surplus as defined in the integrated framework of the SNA. Operating profits at historic costs are liable to give very misleading signals as to the profitability of the production processes to which they relate by systematically undervaluing inputs compared with outputs. They can lead to mistaken decisions at both a microeconomic and macroeconomic level.

1.91 Current cost accounting has ramifications that permeate the entire integrated framework of national accounts. It affects all the accounts and balance sheets and their balancing items. A fundamental principle underlying the measurement of gross value added, and hence GDP, is that output and intermediate consumption must be valued at the prices current at the time the production takes place. This implies that goods withdrawn from inventories must be valued at the prices prevailing at the times the goods are withdrawn and not at the prices at which they entered inventories. This method of recording changes in inventories is not commonly used in business accounting, however, and may sometimes give very different results, especially when inventory levels fluctuate while prices are rising. Similarly, depreciation in the integrated framework of national accounts is calculated on the basis of the estimated opportunity costs of using the assets at the time they are used, as distinct from the prices at which the assets were acquired. Even when the fixed assets used up are not actually replaced, the amount of depreciation charged as a cost of production should be sufficient to enable the assets to be replaced, if desired. When there is persistent inflation, the value of depreciation is likely to be much greater than depreciation at historic costs, even if the same assumptions are made in the integrated framework of the SNA and in business accounts about the service lives of the assets and their rates of wear and tear and obsolescence.

1.92 A difference between the integrated framework of national accounts and commercial accounting is that the term “profits” is not used to describe a balancing item in the integrated framework. The item entrepreneurial income is a close approximation to before tax profits and disposable income to after tax profits. The use of the term disposable income comes from the fact that the corresponding item for the household sector represents the maximum amount available to a household for purposes of consumption after maintaining its net worth intact, that is the current value of its assets minus the current value of its liabilities. For corporations, since they do not have final consumption, this is the amount available for investment.

1.93 Unlike commercial accounting, the integrated framework of national accounts excludes from the calculation of income any assets received or disposed of as a result of capital transfers that merely redistribute wealth between different units, and also any assets received or disposed of as a result of events not connected with production, such as earthquakes or other natural disasters, or acts of war. Holding gains or losses on assets

or liabilities due to changes in their relative prices are also excluded from income generated by production.

1. International accounting standards

1.94 The key international accounting standards for businesses are the International Financial Reporting Standards (IFRS), which are a set of rules for company financial statements developed by the International Accounting Standards Board (IASB). The IASB is an independent standard-setting body. The IFRS replaced the International Accounting Standards (IAS) in 2001. Companies in more than 140 jurisdictions are required to use them when reporting on their financial health.

1.95 In 2025, most countries have adopted IFRS for company accounting. Exceptions include the United States, China and Japan. The United States requires public companies to follow Generally Accepted Accounting Principles (GAAP). However, there is ongoing work to converge GAAP and IFRS. China is working towards adopting IFRS and Japan allows voluntary adoption.

1.96 For public sector units, the International Public Sector Accounting Standards Board (IPSASB) has developed the International Public Sector Accounting Standards (IPSAS). These standards are applied by national, regional and local governments, and related governmental units (such as agencies, boards and commissions). IPSAS do not apply to government business enterprises. IPSAS adapt IFRS to a public sector context when appropriate, wherever possible maintaining the accounting treatment of IFRS unless there is a significant public sector issue which warrants a departure.

1.97 Notwithstanding the differences between the SNA and business accounting that are mentioned above, there is considerable overlap between IFRS/IPSAS and the integrated framework of national accounts. Both the international accounting standards and the integrated framework of the SNA are accrual-based; have assets, liabilities, revenues and expenditures; and apply similar concepts such as recognition, measurement and control. However, there are some conceptual differences between the accounting standards and the integrated framework of the SNA.

1.98 In recognition of the increasing use of international accounting standards by corporations and in the public sector, subsequent chapters make reference to IFRS and IPSAS norms. Chapter 28 on Non-financial corporations and chapter 30 on General government and the public sector provide further information on the relationship between the integrated framework of national accounts and IFRS and the integrated framework of national accounts and IPSAS, respectively.

J. Expanding the scope of the integrated framework of the SNA

1.99 The integrated framework of national accounts is designed to be sufficiently comprehensive that individual countries, whatever their economic structures, institutional arrangements or level of development, can select from within it those parts of the integrated framework that are considered to be most relevant and useful to implement in the light of their own needs and capabilities. The integrated framework is meant to be implemented in a flexible manner and the accounts and tables, classifications and sectoring presented in this volume should not be regarded as fixed. For example, classifications of institutional units, transactions and assets may be implemented flexibly by introducing further aggregation or disaggregation in order to adapt them to the data availability and special circumstances of different countries. The flexible use of classifications does not change the basic concepts and definitions of the integrated framework of the SNA.

1.100 In some cases, the integrated framework of national accounts explicitly insists on flexibility. For example, two alternative methods of sub-sectoring the general government sector are proposed in chapter 5 on Institutional units and sectors, economic territory and residence, without either being assigned priority. Similarly, although the SNA recommends sub-sectoring the households' sector on the basis of the household's level of income or wealth, it stresses that this is only one possible criterion for sub-sectoring. In some cases, it may be more appropriate to subsector on the basis of the principal source of income, socio-economic criteria or the type of area in which the household is located or, indeed, to carry the disaggregation of the households' sector further by using two or more criteria together in a hierarchical manner.

1.101 Ways in which the integrated framework of the SNA may be adapted to meet differing circumstances and

needs are addressed in chapters 34 to 39. Chapter 38 on Thematic and extended accounts provides a general discussion on how flexibility may be used to develop thematic accounts, which use the same concepts as the ones applied in the integrated framework of national accounts but highlight a particular aspect of the economy, or extended accounts that are closely linked to the integrated framework but are not bound to employ exactly the same concepts or restricted to data expressed in monetary terms. (Previously, "satellite accounts" was the term used to describe thematic and extended accounts.) Extended accounts are intended for special purposes such as monitoring unpaid household service work or the state of environment. They may also be used to explore new methodologies and to work out new accounting procedures that, when fully developed and accepted, may become absorbed into the integrated framework of the SNA in the course of time, in the way that input-output analysis, for example, has been integrated into the SNA.

K. Readers Guide to the SNA

1.102 This edition of the SNA comprises 7 main parts:

I. Introduction and overview (chapters 1 to 3)

II. The main foundations (chapters 4 to 6)

III. Structure of the integrated framework of national accounts (chapters 7 to 21)

IV. Cross-cutting issues (chapters 22 to 27)

V. Institutional units and sectors in detail (chapters 28 to 33)

VI. Extended and thematic accounts (chapters 34 to 39)

VII. Supplementary material (Annexes 1 to 5, as well as references, the glossary and an index)

1.103 Part I provides an overview of the main aspects of the SNA, including its place in the measurement of well-being and sustainability (chapter 2) and the main features of the integrated framework that underpins the SNA (chapter 3). This part is helpful for those seeking a broad understanding of the SNA, including users of national accounts statistics who only require a broad overview.

1.104 Part II deals with the main building blocks of the SNA: flows, stocks and accounting rules (chapter 4), institutional units and sectors, economic territory and residence (chapter 5), and enterprises, establishments and industries (chapter 6). This part is helpful for those who want an appreciation of the key aspects of the SNA.

1.105 Part III is of particular interest to compilers of national accounts statistics, and may also be relevant to users who would like an in-depth understanding of these statistics. It describes each of the accounts that make up the sequence of economic accounts, including the current accounts (chapters 7 to 10), the accumulation accounts (chapters 11 to 13) and the balance sheets (chapter 14). To complete the integrated framework of national accounts, it also includes chapters on supply and use tables which underpin the production account (chapter 15) as well as chapters on the two key inputs into the production process: labour (chapter 16) and capital services (chapter 17). Measuring prices, volumes and productivity are vital in understanding economic performance and these are dealt with in chapter 18. The part concludes with chapters on summarizing, integrating and balancing the accounts (chapter 19); elaborating the accounts, including sub-annual and regional accounts (chapter 20); and communicating and disseminating macroeconomic statistics (chapter 21).

1.106 There are a range of issues impacting the economy that cut-across the various accounts in the integrated framework of national accounts. These are elaborated in Part IV, and include digitalization (chapter 22), globalization (chapter 23), insurance and pensions (chapter 24), selected issues in financial instruments (chapter 25), Islamic finance (chapter 26) and contracts, leases, licenses and permits (chapter 27). This part will be of interest to compilers and users who want an in-depth understanding of particular aspects of the integrated framework of national accounts.

1.107 Part V provides details on each of the main institutional units and sectors: non-financial corporations (chapter 28), financial corporations (chapter 29), general government and the public sector (chapter 30), non-profit institutions (chapter 31) and households (chapter 32). It also includes a chapter on transactions and positions between residents and non-residents (chapter 33). This part will be mainly of interest to compilers, although

users wanting an in-depth understanding of the accounts may also find it of interest.

1.108 The integrated framework of the SNA can be enhanced by the compilation of thematic and extended accounts and tables. This is the focus of part V1, which includes chapters on measuring well-being (chapter 34), measuring the sustainability of well-being (chapter 35), input-output tables (chapter 36), from whom-to-whom tables and related financial indicators (chapter 37), thematic and extended accounts (chapter 38) and informal economy (chapter 39). Once again, this part will be of interest to compilers and users seeking an in-depth understanding.

1.109 The supplementary material in Part VII includes annexes on international standards for macroeconomic statistics, and the links to the SNA (Annex 1), The classification hierarchies of the SNA and associated codes (Annex 2), the sequence of economic accounts which provides a numerical example of how the accounts are structured (Annex 3), changes from the 2008 System of National Accounts (Annex 4) and the Research Agenda (Annex 5). This part also includes References, a Glossary and an Index. Of particular note is the Glossary, which has been harmonized across the various macroeconomic statistics standards.

Chapter 2: National accounts and its contribution to measuring well-being and sustainability

A. Introduction

2.1 The measurement of well-being and sustainability is relevant for all countries. Countries face a real and growing range of economic, social and environmental challenges including poverty and food insecurity, social and health inequality, climate change and biodiversity loss. In different but related ways these challenges affect the capacity to satisfy the needs of current generations (well-being), both for the population at large and for different groups of people (distributions), and to ensure that future generations can satisfy their needs (sustainability). Developing and implementing solutions to these challenges require that a significant focus be given to the relevant measurement issues by the community of official statisticians and other experts.

2.2 The breadth of the measurement requirements in the space of well-being and sustainability means that the SNA as a statistical framework must work with and complement other frameworks and measurement initiatives to support the analysis and discussion of these issues. Thus, this chapter describes the ways in which the SNA can contribute appropriately to the wider objectives of measuring well-being and sustainability. It is also recognized at the outset that assessments of well-being and sustainability are context dependent and consequently the focus of discussion in this chapter is on the organization of relevant data to support such assessments rather than providing a definitive quantification of well-being or sustainability.

2.3 The measurement scope of well-being and sustainability involves encompassing and integrating its environmental, social and economic dimensions. Within this scope, the integrated framework of the SNA provides a comprehensive statistical framework for the organization of data concerning the economic dimension following established national accounting rules. The measurement scope of the integrated framework can generally be characterized in terms of data on economic development including production, income, and (the accumulation of) wealth, which is presented in the sequence of economic accounts. For more than 70 years, the organization of economic data following the SNA to create rich and coherent datasets has supported the design, analysis and evaluation of economic policies around the world, and gross domestic product (GDP) has become one of the world's most well-known statistics.

2.4 The institutionalization of economic data in decision making through the accounting structures provided by the integrated framework of the SNA has established credible, comparable and authoritative measures of economic activity suitable for all countries. One effect of this institutionalization has been the wide-spread use of national accounts measures of economic activity, in particular GDP, as indicators of the general performance of a country including its people's well-being and standard of living. Such use of GDP has been criticized as driving poor policy outcomes, notwithstanding the routine advice of compilers of national accounts that there are limitations in using GDP and similar measures of aggregate economic performance as measures of well-being.

2.5 The chapter discusses two primary avenues of contribution by the SNA to the wider objective of measuring well-being and sustainability. The first avenue recognizes that, other than GDP, there is a very wide range of data and aggregate measures contained within the SNA's integrated framework that can be used to inform the discussion of well-being and sustainability. These include measures of household disposable income, consumption, saving and net worth. Further, it is possible to supplement the national level information presented in the sequence of economic accounts with data on the distribution of these economic measures across groups of economic units. For example, measures of household income and wealth may be disaggregated by type of household, income decile, gender and other characteristics. This additional detail provides a richer body of data to support the discussion of well-being and sustainability.

2.6 The second avenue recognizes that a significant part of the development of frameworks and approaches to the measurement of well-being and sustainability has involved applying and adapting the accounting rules and structures applied in the integrated framework of the SNA to organize data on the environmental and social dimensions of well-being and sustainability. Examples of these accounting based approaches cover topics including unpaid household service work, health care expenditure, education and training, and

environmental stocks and flows. The motivation for the development of these frameworks recognizes the potential of accounting-based approaches and the advantages of ensuring that data about the environmental and social dimensions can be readily connected to data from the SNA's integrated framework.

2.7 The description of how accounting approaches can be used to extend and broaden the set of information available for the discussion of well-being and sustainability is a significant step. At the same time, in the history of the development of the SNA, there have been ongoing discussions on the role of the national accounts in the measurement of well-being and sustainability, with long-standing debates about the appropriate setting of boundaries concerning production, income and assets. In essence, the second avenue of discussion in the chapter aims to better highlight the potential for compilers to apply meaningful complementary accounting boundaries, for example concerning unpaid household service work or ecosystem services, and hence organize data that more comprehensively cover the range of stocks and flows relevant for the assessment of well-being and sustainability.

2.8 There is a range of potential accounting boundaries and different challenges in extending the range of stocks and flows (such as concerning human capital). Consequently, this chapter does not describe an overarching or inclusive framework for the integration of all aspects of well-being and sustainability. Nor does it propose a single indicator of well-being and sustainability. Rather, the discussion reflects that accounting based approaches can provide a basis for further discussion and research about the integrated measurement of well-being and sustainability as evidenced by a range of measurement initiatives including by national statistical offices. This approach also highlights the complementary role of the SNA within the broader well-being and sustainability measurement space.

2.9 Further research might focus on (i) establishing higher levels of agreement on the details and associated accounting rules and treatments that are needed to describe a broader integrated accounting framework; (ii) delineating the boundaries and role of the accounts of the SNA as part of a wider framework; (iii) building the methods and data available to compile the range of accounts and tables that would be within the scope of such a framework; (iv) clarifying the limits of accounting-based approaches, for example with respect to recording different value concepts; and (v) explaining the role of measurement and accounting as part of decision making about well-being and sustainability.

2.10 This chapter describes the role of the SNA in supporting the discussion of well-being and sustainability in the following way. Section B introduces the concepts of well-being and sustainability recognizing the range of work that has been undertaken in this measurement space. Using these concepts, it then outlines the measurement scope to be considered and describes the role and benefits of accounting-based approaches to measurement. Section C focuses on the integrated framework of the SNA and summarizes the range of measures within that scope that are relevant in the context of well-being and sustainability. Section D goes beyond the integrated framework and introduces a range of accounting-based approaches that extend and broaden the suite of data available. Sections C and D provide only short introductions to the relevant topics with further details elaborated in different chapters of the SNA, in particular chapter 34 on Measuring well-being and chapter 35 on Measuring the sustainability of well-being.

B. Approaches to the measurement of well-being and sustainability

1. Conceptual framing of well-being and sustainability

2.11 The concepts of well-being and sustainability have been framed in a number of different ways but a common understanding is that they embody economic, environmental and social dimensions. Two entry points to framing the concepts are considered most relevant here and are discussed directly below.

2.12 The first entry point ties the concepts of well-being and sustainability to the concept of sustainable development. The enduring definition of sustainable development is that of the 1987 Brundtland Commission report which defines it as development that "meets the needs of the present without compromising the ability of future generations to meet their own needs" (UN World Commission on Environment and Development, 1987, page 423). This entry point links the measurement of well-being to the measurement of sustainability, i.e., well-being needs to be sustained into the future.

2.13 The second entry point concerns the work of the Joint UNECE/Eurostat/OECD Task Force on Measuring

Sustainable Development (UNECE, 2015). This work frames the broad concept of well-being of households as being reflected in a mix of objective and subjective measures concerning well-being in the "here and now", or current well-being, the well-being of future generations and the well-being of people elsewhere. Thus, households are the focus of measuring well-being as it is ultimately the lives of people that are the primary focus of a well-being perspective. In the following discussion, while the two concepts of well-being and sustainability are distinguished for measurement purposes, it should be acknowledged that they are inherently linked.

2.14 The measurement of the well-being of present and future generations can be considered in a number of ways. Three aspects are of most relevance. Firstly, the goods and services consumed by people as recorded in measures of household final consumption. Secondly, the goods and services consumed by people that are outside the scope of the production boundary as applied in the integrated framework of the SNA. These will include the supply (or loss of) benefits including those sourced from the environment, from unpaid household service work, and from the connections and relationships people hold with each other. Thirdly, people's functioning and capabilities – i.e. the freedom and possibilities they have to satisfy their needs (*Sen, 1993, 2000*). These capabilities will be linked to topics such as education and training, health care and human capital. The connections and boundaries between these different aspects may be challenging to identify. For example, the nature of the relationship between people's level of functioning and capabilities and their level of consumption of market goods and services is not definitive. Thus, well-being is best characterized as a multi-dimensional concept that encompasses a range of benefits accruing to people and not all aspects will be able to be embodied within an accounting context.

2.15 Measuring the sustainability of well-being requires introducing a time dimension, i.e. assessing whether the capacity to provide well-being can be secured in the future. From an economic perspective, the capacity to provide well-being in the future is most readily interpreted in terms of the capital available to underpin future well-being. From an accounting perspective, the link between well-being and sustainability can be reflected by recording monetary and non-monetary data about (i) a range of capitals namely economic, natural, human and social capital; and (ii) the associated changes in benefits (including losses of benefits) across the economic, environmental and social dimensions using a common set of accounting rules and assumptions about how these benefits might change in the future.

2.16 Nonetheless, even using this relatively broad scope, not all relevant aspects of well-being and sustainability will fall within scope of accounting as described further in the following section. In part, this reflects the need to establish a clear boundary of benefits for accounting purposes which, in turn, limits the consideration of a wider set of measures of outcomes (e.g., concerning quality of life) and subjective measures of well-being. For this reason, the discussion in this chapter should be seen as complementing other measurement work. Box 1 (below) lists a range of other frameworks and approaches that concern this area of measurement and the content of this chapter seeks to build on and adapt the relevant findings.

Box 1: Well-being and sustainability initiatives

There have been many approaches to measuring well-being and sustainability over more than 50 years. Collectively, these approaches reflect the importance of measuring well-being and sustainability and the view that the current and future well-being of households is a complex multi-dimensional phenomenon that cannot be comprehensively addressed using a single summary indicator.

The following initiatives are noted here:

- The Stiglitz-Sen-Fitoussi Report by the Commission on the Measurement of Economic Performance and Social Progress, calling for statistics to move "Beyond GDP" and close the gap between aggregate production, citizen's well-being and long-term sustainability.
- The United Nations Sustainable Development Goals (SDGs) adopted in 2015 which recognize the need to build economic growth while addressing a wide range of social and environmental needs.
- Measures of comprehensive or inclusive wealth for an enhanced understanding of national wealth across multiple capitals as a complement to current measures of national income and wealth. Leading work in this area includes the World Bank's Changing Wealth of Nations

(2021) and UNEP Inclusive Wealth Report (2018).

- The development of dashboards with a range of indicators on various aspects of well-being and sustainability by countries and international organizations (e.g., UNECE Sustainable Development Indicators, OECD How's Life?).
- The development of composite indicators which summarize data from multiple themes into single, composite measures of well-being and/or sustainability (e.g., Index of Sustainable Economic Welfare, Genuine Progress Indicator, UNDP Human Development Index, World Bank Multidimensional Poverty Measures).
- The development of global environmental and social thresholds indicating boundaries beyond which sustainability may be compromised (e.g., work on planetary boundaries (Rockstrom et al, 2009) and Doughnut Economics (Raworth, 2017)).
- Advances in the measurement of sustainability and well-being from a corporate perspective including measures of environmental, social and governance risks, and corporate impact reporting and disclosure.

2. Measurement scope of well-being and sustainability

2.17 In the discussion here about the role of the SNA in assessing well-being, "well-being" refers to the current material well-being or economic welfare of households. It is acknowledged that measures of material well-being do not provide a complete reflection of all aspects of well-being. Nonetheless, components of material well-being are important considerations. Chapter 34 on Measuring well-being provides a longer discussion on the measurement scope of well-being, including the link to measures of subjective well-being.

2.18 Within the scope of material well-being are measures of household income, consumption and wealth, labour and work (including unpaid household service work), education, health care and housing. A particular focus of the discussion in an SNA context is identifying measures that are present within the production boundary of the integrated framework of national accounts and those beyond the production boundary. Measures within the production boundary include data on household final consumption expenditure by type of good and service, actual final consumption and disposable income. As explained further in chapter 34 on Measuring well-being, there is also a range of data on health care expenditures and expenditures on education and training that can be organized to provide rich information sets to support decision making.

2.19 Beyond the production boundary applied in the integrated framework of national accounts, a range of aspects is considered relevant in the measurement of well-being. Of particular importance are measures of unpaid household service work, such as concerning child care and food and meal preparation. Measurement of these services is important since it involves the type of activity that can also be undertaken within the production boundary and hence shifts across this boundary are important in understanding wider economic and social trends.

2.20 In measuring well-being using an accounting approach, it is strongly encouraged, and often essential, to incorporate measurement in non-monetary terms. Thus, for example estimates of the number of people employed and their hours worked, and data on the allocation of time across different activities (e.g., number of hours of sleep) all provide information to support analysis of well-being. In many instances, non-monetary data can be organized using accounting based approaches to complement measures in monetary terms.

2.21 Finally, for each of these areas of well-being, the scope envisaged in this discussion also encompasses measures of the distribution across key socio-demographic characteristics, such as income and wealth deciles/quintiles, household type, home ownership status, gender, age group, education level or employment status.

2.22 In the discussion here, supporting the assessment of sustainability refers to accounting for the stocks and changes in stocks of a range of capitals, namely economic, natural, human and social capital. From the perspective of economic theory, the measurement of sustainability focuses on the changes in stocks of capital over time and the extent to which there is the maintenance and generation of economic resources to support the material well-being of households in the future.

2.23 The measurement of economic capital falls within the scope of the integrated framework of the SNA and encompasses produced non-financial assets, non-produced non-financial assets (e.g., contracts, leases and licences) and financial assets and liabilities, while excluding natural resources which are included under natural capital. The relevant data excluding natural capital cover the values of the stock of produced capital and changes in those values including due to investment, depreciation and other changes in the value of asset and liabilities. Chapter 11 on Capital account and chapter 14 on Balance sheet provide a full description of the relevant accounting considerations.

2.24 In relation to natural capital, some elements are recorded in the integrated framework of national accounts, including monetary stocks and flows associated with mineral and energy resources, biological resources, water resources, and land. To complement the measures of natural resources in the integrated framework of the SNA, the SEEA provides a comprehensive set of monetary and non-monetary accounts covering natural resources and ecosystem assets. It includes measurement of (i) stocks and changes in stocks of natural resources and ecosystem assets; (ii) ecosystem services supplied by ecosystems (e.g., global climate regulation, air filtration and water regulation); (ii) the pressures exerted on the environment through economic and human activity (e.g., flows of air pollutants, solid waste, wastewater); (iii) the changes in the condition of ecosystems due to human activity, both positive and negative; and (iv) responses by economic units in terms of expenditures, taxes, subsidies and other flows recorded but not separately identified in the integrated framework of national accounts. The *SEEA* thus facilitates a broader recording of well-being in addition to broader measures of natural capital and its sustainability. Chapter 35 on Measuring the sustainability of well-being provides an introduction to the key features of the *SEEA*.

2.25 In relation to human capital, some of the benefits of human capital are explicitly recorded in the integrated framework of accounts, i.e., remuneration of employees, but the stock value of human capital itself is not included. Measures concerning human capital have been developed separately and an introduction to the key features is provided in chapter 35. While connections to the integrated framework of national accounts can be made to support a broader assessment of sustainability, there is a number of remaining accounting and measurement challenges requiring further research.

2.26 Social capital is generally understood as the combination of formal and informal institutions and networks that support the functioning of our societies and economies. A short introduction to social capital is provided in chapter 35 recognizing that the measurement of social capital is a developing area and that, at present, its measurement from an accounting perspective is not sufficiently advanced for inclusion in the discussion. Future research may identify ways in which social capital can be effectively defined and measured for accounting purposes.

2.27 It is acknowledged that the scope of measurement reflected here does not encompass all possible areas of measurement with regard to well-being and sustainability. Nonetheless, the scope does bring into consideration measures not currently considered in the compilation of the integrated framework of national accounts. It is the ambition of the discussion here to describe how this range of data in monetary and non-monetary terms can be meaningfully connected using accounting rules and hence provide a coherent information set to support the discussion of well-being and sustainability. Through these descriptions the role of the SNA's integrated framework within the wider measurement space should become apparent.

2.28 As an example of the potential application of these accounting data, from the perspective of the economic theory concerning well-being and sustainability, it is fundamental that analysis uses measures in volume and real terms, i.e., taking into account the effects of price change (see chapter 18 on Measuring prices, volumes and productivity for details). Thus, while in an accounting sense the initial focus is on the organization of data in nominal or current price terms for each accounting period, for economic analysis purposes, changes in nominal terms do not provide a correct measure or approximation of changes in well-being or its sustainability.

3. Role and benefits of accounting-based measurement approaches

2.29 An accounting-based approach has a number of features that support the organization of data relevant to the assessment of well-being and sustainability. At its core, accounting is an approach that can be used to describe the components of systems – for example, economic, financial, or environmental systems - and how the

components of these systems change over time. Through the logic of defining and recording stocks and flows, the application of accounting rules enables the state and changes in the state of a system to be systematically and comprehensively recorded and allows the benefits supplied by a system to be quantified. Traditionally, the focus in the application of accounting has been to economic and financial systems with recording being undertaken in monetary terms. However, as demonstrated in this chapter, accounting rules can be readily applied to the organization of data about environmental and social systems with recording being undertaken in both monetary and non-monetary terms.

2.30 The complementary advantage of using accounting to describe systems is that the logic of stocks and flows speaks directly to the connection between well-being and sustainability. In short, flows provide information relevant to current well-being and the maintenance of (and investment in) stocks will underpin current and future flows of benefits. Conversely, the depletion, degradation or depreciation of a system's stocks will reduce the potential of deriving benefits from these stocks in the future. Accounting is thus a tool that can organize data and information in a way that can be readily interpreted in relation to well-being and sustainability.

2.31 To underpin its systematic and comprehensive approach to recording, accounting relies on establishing measurement boundaries concerning both the stocks and flows to be incorporated. Consistently applying the same measurement boundaries over time provides a system boundary to underpin analysis. For example, establishing the boundaries of economic territory consistently across countries allows interactions between these economic systems to be recorded coherently. The connections across different accounts are further reinforced through the consistent use of classifications, for example of economic agents (units) and products.

2.32 However, as described above, the measurement of well-being and sustainability requires consideration of a wider range of stocks and flows, i.e., alternative measurement boundaries are required to support a more complete description of a wider system. While alternative measurement boundaries may be used, accounting approaches retain the benefits provided through a systematic recording of stocks and flows, i.e., consistency, coherence, comparability and repeatability. In addition, there are measurement advantages in the ongoing confrontation of data from multiple sources within an accounting process that improve the quality and credibility of the data. This includes confrontation of data in monetary and non-monetary terms.

2.33 A significant analytical benefit from the consistent application of accounting approaches across different aspects of economic, environmental and social systems, is that it builds a set of data that can be meaningfully connected and integrated to support analysis across the different aspects. For example, the measurement of unpaid household service work can be linked to both measures of production in the economy and to measures of health care expenditure. Where data are available, such analysis may also be presented by household type, e.g., by income decile.

2.34 It is common for the measurement of well-being and sustainability to focus on the development of a set of indicators selected and organized around the three core dimensions of economy, society and environment. Sometimes the indicators are aggregated to derive composite indicators. Where indicator-based approaches to measuring well-being and sustainability are applied, the data organized using accounting-based approaches can readily support the organization of relevant data for the derivation of indicators and may support a richer analysis of connections between indicators, for example between food security and agricultural productivity.

2.35 The potential of accounting-based measurement approaches and the relevance of information beyond the scope of the integrated framework of national accounts has been widely recognized for many years and this understanding has seen the development of a range of accounting-based measurement approaches for specific areas of interest. Traditionally referred to as satellite accounts, the area of thematic and extended accounting (discussed in chapter 38) has been a long-standing feature of national accounting. Stand-alone accounting-based frameworks have now been developed across a number of areas, including tourism, health, education, culture, environment, transport, unpaid household service work and labour. The frameworks of most relevance to the measurement of well-being and sustainability are described in Section D below. These frameworks have reached different levels of endorsement within statistical processes recognizing that, as for the integrated framework of the SNA, the need for ongoing development and refinement remains present.

2.36 Of special note is that developments in a number of areas including environmental-economic accounting, labour market tables and health accounts, have demonstrated the way in which accounting rules can be applied to non-monetary data and thus support the integration and comparison of a broader range of data. By

way of example, accounts have been developed for the extent (area) of ecosystems, stocks of carbon, hours worked of labour and numbers of health procedures. By encompassing these types of non-monetary data, more comprehensive linkages between the economy, society and the environment may be obtained.

2.37 In the context of broader monetary measures, another accounting-based approach is commonly referred to as wealth accounting. Wealth accounting, as the label suggests, focuses on measurement of a nation's wealth, ideally reflected in a balance sheet that includes all forms of capital – natural, human, social and economic capital, the latter including financial capital. Wealth accounting theory speaks directly to the need to invest in and maintain stocks of capital to secure future benefits. Its increasing prominence in policy discussions through work on measures of comprehensive and inclusive wealth by the World Bank and UNEP, as well as work at national level in a range of countries, reinforces the measurement approach outlined here and its implementation can be directly supported using the framing described.

2.38 Collectively, the ambition presented in the SNA discussion of well-being and sustainability is to describe how accounting approaches can be used and adapted to provide a coherent body of information to support discussion of these fundamental topics. The coherent body of information will be reflected in consideration of two main parts. Firstly, the role of the integrated framework of national accounts, including measures of distributions across households (section C); and secondly, accounting approaches beyond the integrated framework (section D).

4. Considerations in the interpretation of accounting-based measures of well-being and the connection to welfare values

2.39 As mentioned above, well-being is a wide-ranging concept with many different aspects. Some of these aspects may be captured reasonably well by one or more of the key aggregates of the integrated framework of the SNA. At the same time, some aspects of well-being are likely to remain outside the reach of the integrated framework of national accounts given it was not designed with the measurement of well-being as a prime consideration. This section summarizes the main issues that should be considered in interpreting measures in relation to well-being that can be derived from the integrated framework, highlights some limits of accounting based approaches more generally in relation to measuring well-being and introduces the effects of applying different principles for monetary valuation in measuring well-being.

2.40 It is useful to recall that there is a long history of debate dating to at least the initial development of the SNA in the 1930s concerning the role of GDP and other national accounts measures in the assessment of changes in material well-being or economic welfare. In recent editions of the SNA, the position of the SNA is that while the change in GDP in volume (or real) terms is often taken as a measure of changes in material well-being, the SNA makes no claim that this is a preferred or appropriate measure. There are several conventions applied in the SNA's integrated framework that argue against such an interpretation of the accounts. First, in a market economy, the prices used to value transactions in different goods and services should reflect not only their marginal costs of production but also the marginal benefits or utilities derived from using the goods and services for production or consumption. This framing establishes a theoretical link between changes in aggregate production and consumption in volume terms and changes in material well-being. However, changes in the volume of consumption are not the same as changes in well-being more broadly defined, and changes in well-being may not be proportionate to the increase in consumption.

2.41 Further, it is noted that the unit incurring the expenditure is not necessarily the one that benefits. For example, governments will commonly undertake expenditure on health and education services, while the benefits are received by households. To support analysis of this distinction, the integrated framework of the SNA describes the concept of actual consumption, that adjusts the consumption expenditure of households to account for goods and services purchased by government on behalf of households (e.g., government provided education and health care).

2.42 Secondly, the production boundary of the integrated framework of national accounts is such that the services produced and consumed within a household are not included in the measurement of GDP except for owner-occupied housing services and the payments made to domestic staff. Similarly, no estimate is included in the integrated framework of the SNA for the labour services of individuals provided without cost to non-profit institutions, i.e. volunteering. In these cases, the contribution of time increases the overall material well-being

of individuals and households in the community. The exclusion of these services from the production boundary is not a denial of the relevance of the services but reflects a view that their inclusion would not necessarily add to the usefulness of the national accounts for the primary purposes for which it is designed, that is macro-economic policy and analysis. The inclusion of measures of unpaid household service work as part of the measurement of well-being (see chapter 34 for details) is specifically targeted at responding to this aspect of the measurement scope of the integrated framework of national accounts for other analytical purposes. More generally, it is the case that the use of alternative production boundaries for the compilation of measures of national income may support the derivation of improved measures of changes in well-being.

2.43 Thirdly, the level of an individual's and a nation's well-being may be affected by a wide range of factors that are not economic in origin. Consider the effects of an exceptionally severe winter combined with an influenza epidemic. Other things being equal, the production and consumption of a number of goods and services may be expected to rise in response to extra demands created by the cold and the epidemic. These additional expenditures are often referred to collectively as defensive expenditures. As compared with the previous year, people may consider themselves to be worse off overall and thus total well-being could fall even though GDP would increase in volume terms, notwithstanding the fact that the community likely finds itself better off with the extra production and consumption of heating and health services than without them. Again, as noted in relation to unpaid household service work, the use of alternative measurement boundaries to account for defensive expenditures may support the derivation of improved measures of changes in well-being.

2.44 Fourthly, some production activities may cause a loss in well-being that is not fully reflected in GDP. A factory, for example, may generate noise and emit pollutants into the air or nearby water systems thereby causing a loss of amenity and a loss of well-being to individuals living nearby or downstream. If there is no financial penalty to the factory, the consequences on well-being could go unmeasured in the integrated framework of the SNA or may show up elsewhere in the accounts, for example in the form of lower rents, higher health related expenditures or lower labour productivity for those people living nearby or downstream. On the other hand, if the factory incurs expenditures that reduce the noise or quantity of pollutants emitted, well-being should rise but the offset will not necessarily be complete. Of course, it is not a simple task to identify and re-attribute the full range of economic effects of environmental and other externalities, or to determine which effects are captured within aggregate measures such as GDP. However, undertaking this work would support the derivation of improved measures of changes in well-being. As one step in that direction, Section D (below) introduces the use of accounting approaches to organize data on the extent and condition of ecosystem assets and flows of ecosystem services to provide a structured set of data to support measurement of some external effects in a more explicit and integrated manner.

2.45 The four issues just described concern the potential to interpret measures from the integrated framework of the SNA, such as changes of GDP in volume terms, as measures of changes in material well-being. Beyond these issues, there are also limits in the extent to which measures of material well-being should be considered measures of well-being more broadly. Three issues are of particular relevance. Firstly, in keeping with the production boundary of the integrated framework of national accounts, material well-being is measured in relation to the expenditure on goods and services consumed by households rather than in relation to the outcomes arising from their consumption. Thus, for example, a distinction can be made between the expenditure on outputs of doctors' services and medicines and the outcome of improved length and quality of life that is expected from consumption of these outputs. Although outputs may be important in securing outcomes, a focus on measuring outputs will not provide as comprehensive a measure of well-being as may be desired.

2.46 Secondly, measures of material well-being exclude measurement of subjective well-being. This may include factors such as personal and family circumstances, quality of health, and the satisfaction or lack of it derived from employment. While there is a growing body of measurement expertise and experience concerning subjective well-being, it is a topic that lies outside the domain of accounting and is not considered further here. Future research may identify means by which data on subjective well-being and economic data from the accounts may be appropriately connected.

2.47 Thirdly, the measurement of material well-being discussed here does not encompass the recording of data on spiritual and cultural values or values and preferences with respect to the environment and nature. Some aspects of these values may be reflected in measures of subjective well-being and some aspects will be reflected in measures of stocks and flows related to natural capital in biophysical terms. However, while these

values will be relevant in an overall assessment of well-being, the incorporation of them within an accounting framing requires further investigation.

2.48 All of the preceding discussion on the potential to use GDP as a measure of material well-being relates to the scope of measurement. Another important consideration in appropriately interpreting accounting measures in monetary terms is understanding the underlying valuation concepts and methods. Most commonly, the valuation methods that are used in the measurement of changes in material well-being focus on the measurement of changes in welfare values – i.e. measures of the change in total benefit (or surplus) accruing to consumers and producers from undertaking exchanges of goods and services. Welfare values will thus incorporate estimates of the changes in consumer surplus received by consumers. Importantly, such measures of consumer surplus are estimated either by ex-ante comparisons of two alternative contexts (programs) or by ex-post (i.e. observed) evaluations compared to a counterfactual or alternative context. The resulting estimates of the differences between two contexts do not reflect observed changes in prices and hence are inappropriate for inclusion in the accounts. However, in the case of ex-post evaluations, the observed (or realized) price that is one input into the derivation of changes in welfare values is equivalent to the exchange price used in accounting. Further, in the measurement of changes in consumer surplus, if the actual programs and institutions are compared at two points in time, then changes in exchange values in volume terms will approximate changes in consumer surplus. In short, while welfare values reflecting changes in consumer surplus are not equivalent to the exchange values used in accounting, there are connections between these valuation concepts. Chapter 4 on Flows, stocks and accounting rules provides a discussion on valuation principles and methods applied in the national accounts.

C. The role of the integrated framework of the SNA in measuring well-being and sustainability

1. Introduction

2.49 The integrated framework of the SNA provides a comprehensive record of an economy's production, income, accumulation and wealth. An overview of the framework is provided in chapter 3 and the thorough description of the relevant accounting rules, treatments, measurement boundaries and economic units required for the compilation of the integrated framework is the focus of SNA chapters 4 to 20.

2.50 One feature of the sequence of economic accounts within the integrated framework is that each account in the sequence contains one or more aggregates, each of which has a particular economic interpretation. For example, an aggregate from the production account is gross domestic product (GDP) providing a measure of the value added of resident economic units; and an aggregate from the balance sheet is net worth revealing the total value of assets less liabilities for an economy.

2.51 The potential to describe a coherent set of accounts and tables arises from the application of a single production boundary and a single asset boundary across the various accounts. The boundaries are defined and applied through chapters 4 to 20. One key outcome from the use of these boundaries is that there is a coherence across measures of income, consumption, accumulation and wealth. At the same time, the consistent application of production and asset boundaries means that there is a number of elements relevant to measurement of well-being and sustainability that are excluded from the measures within the integrated framework of national accounts. For example, unpaid household service work and ecosystem services are both excluded from the production boundary of the integrated framework and the full benefits of these flows are not recorded in measures of national income or wealth. Thus, as explained in the earlier sections, a more complete basis for the measurement of well-being and sustainability requires consideration of areas outside the standard boundaries of the integrated framework.

2.52 To provide a clear structure for delimiting the role of the SNA in the context of measuring well-being and sustainability, the current section focuses on measures within the integrated framework of national accounts, while the following section introduces measures that relate to aspects of well-being and sustainability that are outside the standard production and asset boundaries.

2.53 The combination of accounts and aggregates within the integrated framework of national accounts provides a rich basis for organizing data about material well-being and sustainability and for deriving relevant

aggregates and indicators. In particular, the integrated framework provides a comprehensive platform for the integration of data on prices and quantities of goods, services and assets and hence supports measurement in volume terms and in turn provides measures to support measurement of economic welfare. Four areas are introduced in this section: measures of income and consumption, measures of wealth, measures of distributions across households and measures concerning the environment. More detail on relevant measurement approaches, in particular concerning measures of distribution of income, consumption and wealth are provided in chapter 32 on Households, chapter 34 on Measuring well-being and chapter 35 on Measuring the sustainability of well-being. Note that the potential to undertake measurement beyond the production and asset boundaries applied in the integrated framework of national accounts is considered in Section D.

2.54 In the measurement of income, consumption, wealth and distributions across households, the analysis of material well-being and sustainability can be well supported through measurement of spatial variation. For example, measurement can focus on breaking down income, consumption and wealth measures by sub-national administrative areas within a country. Such spatial information can be of high relevance in understanding the variation in trends in material well-being across a country but also in terms of supporting policy responses in cases of catastrophic events such as floods, hurricanes and storms.

2. Measures of income and consumption

2.55 The measurement of income and consumption relates directly to the measurement of current material well-being. At a national level, aggregates such as gross domestic product and gross national income provide measures of the income generated by economic activity within the scope of the production boundary of the integrated framework of national accounts. However, neither of these aggregates recognizes the cost of using capital in the generation of income. In the past, compilation challenges limited the potential for cross-country comparability of net measures which deduct the costs of capital. With advances in data and methods, the 2025 SNA places greater emphasis on the derivation of net measures which in turn provides aggregates of production and income that are more relevant for the purposes of assessing material well-being and sustainability. In scope of the integrated framework of the SNA, net measures are derived by deducting the depreciation and the depletion of non-financial assets used in production.

2.56 Net measures, such as net domestic product and net national income, do not replace but generally complement the corresponding gross measures which remain relevant aggregates for different policy and analytical questions, for example concerning aspects of monetary and budgetary policy. A longer discussion on the relevance of net measures is presented in chapter 21 on Communicating and disseminating macroeconomic statistics.

2.57 Given the focus of material well-being on the household sector, of particular relevance in the SNA sequence of economic accounts are the accounts of the household sector. Important aggregates from these accounts for the assessment of material well-being include: household disposable income, household final consumption, household saving and household net worth.

2.58 Across countries, there is variation in the way in which governments provide services to households. To support improved comparison and understanding of household consumption patterns across countries, the SNA has developed measures of adjusted household final consumption and disposable income, where individual consumption paid for by governments and non-profit institutions serving households (NPISHs), for example, health and education services, are allocated to the household sector rather than being treated as final consumption of general government and NPISHs. Of course, households will also benefit from the collective services provided by governments such as law and order and environmental quality, and a comparison of levels of expenditure on these services will also provide insight into the material well-being of households.

2.59 The distribution and redistribution of income shown in the earned income accounts and the transfer income accounts for households will also provide measures of the different mix of incomes earned by households including remuneration of employees, property income (interest, dividends, rent, etc.), social benefits and other current transfers, while also recording payments of taxes and social contributions. The composition of these flows and structural changes over time can provide important context in understanding the general

material well-being of households, particularly when supported by breakdowns according to different household groups.

2.60 The use of income account for households derives measures of household saving by deducting final consumption expenditure from disposable income. In compiling measures of final consumption expenditure, most national accounts provide some level of detail concerning the types of goods and services consumed by households following the *Classification of Individual Consumption by Purpose (COICOP)*. Such information can provide a national perspective on the share of final consumption expenditure spent on food, transport, education, energy, etc. Again, breakdowns of these data by household groups will provide richer insights into material well-being. These topics are considered further in chapter 32 on Households and chapter 34 on Measuring well-being.

2.61 For many of these income and consumption measures, the assessment of current material well-being will be complemented by deriving measures in volume or real terms, i.e., removing the effects of price change. While volume and real measures are not presented directly in the sequence of economic accounts, their measurement is a standard feature of national accounting compilation systems with standard practices described in chapter 18 on Measuring prices, volumes and productivity.

3. Measures of wealth

2.62 At a national, economy-wide level, the SNA sequence of economic accounts can provide a series of wealth related measures, including measures of net worth, that are relevant in the assessment of material well-being and sustainability. The compilation of time series of wealth measures will provide an indication of whether the capital base of a country is improving or declining and measures expressed in real terms or per capita terms will provide additional insights on the aggregate trends. The capital account, the other changes in volume of assets and liabilities account, the revaluation account, and the balance sheet provide information on measures of stocks of wealth and changes in these stocks, including investment (capital formation), depreciation, depletion, appearances, catastrophic losses and revaluations. All of this information can help build a picture of the wider trends and expectations for wealth for the economy as a whole. Although the assets in the sequence of economic accounts do not cover the whole suite of assets mentioned before, the sequence does capture a full set of produced and non-produced non-financial assets, including natural resources. In addition, the SNA sequence of economic accounts provides a complete overview of financial assets and liabilities. If there are trends of concern within the scope of these assets, then these trends will be relevant in a broader context as well.

2.63 For the household sector as a whole, a range of wealth measures can be taken from the sequence of economic accounts. Thus, measures of household wealth, its changes over time, in real terms and per capita, can all be taken from the household sector's sequence of economic accounts.

2.64 At both the economy-wide level and for the household sector, it will be relevant to consider the changing composition of financial and non-financial assets within the balance sheet. Particular focus may be placed on, for example, estimates of pension entitlements and measures of the stock of dwellings and land. Supplementary items such as the value of consumer durables included in household final consumption expenditure will also be of relevance for assessing the material well-being of the household sector.

2.65 For all sectors and for the economy as a whole, measures of financial assets and liabilities may be an important consideration in assessing sustainability. This could include for example, data on the composition of financial assets, levels of debt and liquidity. The measurement of financial assets and liabilities is discussed in chapter 12 on Financial account, and is not considered further here aside from noting the relevance of understanding the distribution of household sector financial assets and liabilities.

2.66 Although not included in the balance sheets of households, the sustainability of their material well-being will usually be closely tied to the quantity and condition of a range of public and private investments that support the supply of collective services (e.g., investments in roads, hospitals, schools, energy and water supply, etc.). The integrated framework of national accounts should provide relevant information on the capital stock, the level of depreciation, the level of gross fixed capital formation in these asset types, and the sources of funding for this investment. Again, measures in volume terms and per capita will be of high relevance in assessing sustainability in terms of the capacity of the current capital stock to support the supply of relevant services.

4. Measuring distributions across households

2.67 All of the measures and aggregates described above are included within the SNA's integrated framework of national accounts and can provide a rich national level view of many aspects driving the current material well-being of households, recognizing that important aspects of well-being lie outside the measurement boundary. However, in all societies, not all households are equal and hence the nature of the distribution of income, consumption and wealth across households is an important factor in understanding current material well-being.

2.68 The various income, consumption and wealth measures described above can be ascribed to individual households and then households can be grouped to derive aggregates focused on different types of households within the household sector. Household types may be grouped by income or wealth deciles/quintiles, home ownership status, or location (e.g., region). Alternatively, households may be grouped according to the characteristics of a reference person in a household, such as gender, age, education level, employment status and industry of employment. A comprehensive discussion on these distributional issues is presented in chapter 32 on accounting for the household sector. That discussion on distribution encompasses a range of topics including links to the measurement of the informal economy, the use of equivalence scales and the recording of supplementary items recommended for measurement such as consumer durables.

5. Measures concerning the environment

2.69 A long-standing area of interest for many analysts has been the description of the connection between the economy and the environment. This has often been simplified in a national accounting context as requiring the adjustment of measures of GDP and the derivation of so-called green GDP. In fact, the connections between the economy and the environment are far more extensive. They encompass the dependencies and impacts of economic activity on the environment, as reflected for example in flows of water, energy, natural resources and emissions, and the various economic activities focused on environmental protection and restoration.

2.70 In this context, the *SEEA* has been developed to provide a comprehensive framework for measuring the environment and its connection to the economy. It is introduced further below. The accounts of the *SEEA* apply and extend the accounting treatments and rules of the integrated framework of the SNA and there are a number of instances where there is an overlap between the entries in the *SEEA* and entries in the integrated framework of national accounts. In particular, both the *SEEA* and the integrated framework of the SNA incorporate measures of environmental assets including the value of natural resources, the changes in value and volume of these resources (including through discovery, depletion or catastrophic loss) and associated income streams (including flows of natural resource rent). As well, the integrated framework of national accounts contains data on transactions that can be associated with the environment such as environmental protection expenditure (and associated financing arrangements), environmental taxes and subsidies and payments for access to resources. The *SEEA* provides accounts which explicitly identify these transactions since they are not usually readily identifiable in standard presentations of the economic accounts.

2.71 There are a number of refinements to the integrated framework of the SNA concerning environmental issues, many of which build on advances in accounting described in the *SEEA*. Firstly, the measurement of natural resources has been explicitly extended to include the value of energy from renewable sources, including wind and solar. Secondly, the entries to record resource rents arising from the extraction of natural resources have been amended. Thirdly, the costs of depletion of natural resources are now treated as a deduction from income in the production account. Fourthly, the measurement boundaries and treatments have been clarified for different types of biological resources. Fifthly, the recording of emission trading schemes and other environmentally related transactions such as provisions, has been updated to support comparable and coherent measurement. Finally, natural resources have now been recognised as a separate category at a high level of the classification of assets, next to produced non-financial assets and non-produced non-financial assets, the latter two categories thus excluding natural resources.

D. Accounting approaches for the measurement of well-being and sustainability beyond the integrated framework of the SNA

1. Key features of accounting approaches

2.72 There is widespread acknowledgement of the relevance of measuring aspects of well-being and sustainability that are not captured within the standard production and asset boundary of the SNA's integrated framework. Section B introduced the relevance of using accounting-based approaches for the organization of data that can enhance and broaden the information set for the discussion of material well-being and sustainability. This section introduces a range of well-established accounting approaches for measuring components of material well-being and sustainability beyond the integrated framework of the SNA. In doing so this section highlights the potential to apply alternative and complementary measurement boundaries.

2.73 There are five key features of the accounting approaches that have been developed. Firstly, the accounting approaches adapt the various types of account structures used in the integrated framework of the SNA, including supply and use tables, balance sheets and asset accounts. This supports application of the same accounting identities as applied in the integrated framework and the derivation of balancing items and aggregates.

2.74 Secondly, the accounting approaches include accounts in both monetary and non-monetary terms, thus supporting the organization of a wider range of information than recorded within the integrated framework of national accounts.

2.75 Thirdly, connections and intersections can be made between the accounting approaches described here and individual accounts within the integrated framework of the SNA. For example, accounts for flows of water and energy and accounts for unpaid household service work can be connected to standard production accounts and household sector income accounts. Beyond the analytical benefits of these connections and intersections to the integrated framework, they also allow for more coordinated data collection and treatment.

2.76 An extension of this feature is that the linkages across different topics can be more readily analysed. For example, there are important connections between unpaid household service work and the production of health care. The consistent application of accounting approaches can facilitate a richer understanding of these connections, including for example, examining each of these topics using a common disaggregation of household types.

2.77 Fourthly, connections and intersections across accounting approaches and the organization of data can be strongly enforced through the use of consistent classifications and associated alignment in the detail presented in accounting tables. Of particular relevance will be the consistent application of classifications of economic agents (by institutional sector and by industry), classifications of products and socio-economic breakdowns such as household groups.

2.78 Finally, all accounting approaches support discussion of the connections inherent between material well-being and sustainability that relate to changes in the quantity and quality of the stocks of different capitals and the flows of benefits (or loss of benefits) that are embodied in material well-being. The embodiment of these connections between stocks and flows across accounting frameworks is an empowering one for users and compilers through the ability to frame the discussion of material well-being and sustainability using a common language across economic, environmental and social dimensions.

2.79 While the compilation of these accounting approaches expands and broadens the range of information to support the discussion of well-being and sustainability, there remain a range of aspects that are not within scope of the measurement describe here. Such aspects include health outcomes (as measured for example by life expectancy), subjective well-being, social cohesion, crime and justice, and governance. Also not discussed here are applications of accounting approaches to support measurement in relation to specific activities or events (such as the effects of catastrophic natural disasters), although accounting approaches can help to understand the impact of these activities or events.

2.80 The remainder of this section introduces six accounting approaches of high relevance to the discussion of well-being and sustainability, namely the accounts of the *SEEA*, and accounting for labour, health care, unpaid household service work, education and training and human capital. Figure 2.1 provides a stylized representation of the focus of and connections between these various thematic and extended accounts and the

integrated framework of national accounts, including household distributional accounts and labour market tables.

Figure 2.1: A broader and enhanced combination of accounts

2.81 Additional detail on the connections between these accounting approaches and the integrated framework of the SNA is presented in chapter 34 on Measuring well-being and chapter 35 on Measuring the sustainability of well-being, and there is an extensive specific literature on each of these accounting frameworks that should be referenced when working on these topics. Further, there is discussion of some of these accounting approaches in specific SNA chapters. These chapters include Balance sheet (chapter 14); Supply and use tables (chapter 15); Labour (chapter 16); Summarizing, integrating and balancing the accounts (chapter 19); Households (chapter 32) and Thematic and extended accounts (chapter 38). The presence of these connections is inevitable given the inherent inter-connectivity of the SNA system and its wider connections as described here and hence some overlap in the discussion across the chapters should be expected.

2. System of Environmental-Economic Accounting (SEEA)

2.82 The *System of Environmental-Economic Accounting (SEEA)* is a multipurpose statistical framework that describes the environment and its connections to the economy. The *SEEA* is presented in a number of documents that collectively provide statistical standards, international recommendations and technical guidance. These documents include the *SEEA Central Framework* and the *SEEA Ecosystem Accounting* as well as the supplements *SEEA Water*, *SEEA Energy* and *SEEA Agriculture, Forestry and Fisheries*.

2.83 The *SEEA* complements the SNA by providing a thorough approach to the organization of relevant environmental and economic data in non-monetary and monetary terms. While there are some overlaps with the scope of the integrated framework of the SNA, for example concerning accounting for the monetary value of natural resources, there are many areas covered in the *SEEA* that are not accounted for in the integrated

framework of the SNA. However, the connection between the two systems has allowed the significant advancements in the *SEEA* since 2010 to provide important inputs to the update of the SNA within the general intent to harmonize concepts, increase the visibility of environmental issues and refine valuation concepts and methods across both statistical frameworks.

2.84 The accounting described in the *SEEA* commences from the perspective of recording all environmental stocks and flows and the connections to economic activities. Thus, within the scope of the *SEEA* are accounts for environmental assets in non-monetary (biophysical) and monetary terms; accounts (physical supply and use tables) for material and energy flows; and accounts for environmental transactions, including accounting for environmental taxes and subsidies and the activities of the environmental goods and services sector.

2.85 In relation to environmental assets, to cover the breadth of stocks and flows, the *SEEA*'s measurement boundary is broader than the one applied in the integrated framework of national accounts. In the *SEEA Central Framework* all environmental assets are included whether or not they have an exchange value within scope of the integrated framework of the SNA. Thus, for example, the area of land without an exchange value is included within the scope of the land accounts of the *SEEA Central Framework*. The *SEEA Ecosystem Accounting* places direct focus on the measurement of ecosystem assets and the services they supply. It extends the asset boundary for environmental assets beyond the coverage of economic assets in the integrated framework of the SNA by including all ecosystems within a country and extends the production boundary by recording flows of ecosystem services between ecosystem assets and economic agents (units).

2.86 Specific examples of *SEEA* accounts include supply and use tables for water, energy, air emissions (including greenhouse gas emissions), emissions to water and solid waste. Each of these accounts is structured to provide a comprehensive tracking of flows from the environment, within the economy, and returns to the environment; and to present data according to the industry and sector classifications used in the SNA. The data can thus support the derivation of many indicators (e.g. footprint indicators) and types of analysis (e.g., extended input-output analysis). The *SEEA Central Framework* also provides definitions that enable environmental transactions recorded within the integrated framework of the SNA to be identified and consistently reported.

2.87 The *SEEA Ecosystem Accounting* framework presents standards and recommendations for the measurement and analysis of ecosystem stocks and flows. Accounting for ecosystem assets and the services they generate is crucially important for reflecting the importance of the environment to a fuller extent and hence providing more complete measures of well-being and sustainability. In accounting for stocks, ecosystem accounting involves measurement of the extent of different ecosystem types and their condition. In accounting for flows, ecosystem accounting provides a framework for recording flows of ecosystem services such as biomass provisioning, air filtration, water purification, coastal protection, pollination and recreation related services that collectively contribute to well-being either as inputs to the production of goods and services or in providing additional benefits (e.g. health). The *SEEA Ecosystem Accounting* thus recognizes stocks and flows that are outside the production and asset boundaries applied in the integrated framework of national accounts and presents an associated sequence of accounts.

2.88 The range of data encompassed by the *SEEA* provides a rich basis for describing the environmental dimension of well-being and sustainability and the use of an accounting structure provides the opportunity to link and use environmental data alongside, and in combination with, the data from the integrated framework of national accounts and other data discussed in this chapter. For many well-being and sustainability related reporting and analysis purposes, the development of coherent information sets linking the environment and the economy represents a significant step forward. Chapter 35 on Measuring the sustainability of well-being provides further discussion of the *SEEA*.

3. Labour

2.89 In addition to providing insights into the role of labour in the production process, more detailed information on labour is important as it directly contributes to the well-being of households. Firstly, it provides the income needed to satisfy basic needs and pursue other important life goals. Secondly, the quality of a job, the opportunities it provides to develop new skills, and the time spent commuting and in the workplace are all aspects directly affecting household well-being.

2.90 It is recommended to include tables on labour as standard components to accompany the integrated framework of national accounts (as is the case for the supply and use tables). These labour market tables provide coherent and consistent data on aspects of the labour market, both in monetary terms and in physical terms. The information in the labour market tables will provide insights into the labour market, its role in the distribution of income, and the role of labour in economic growth. This information will also provide insights into working and living conditions, including the impact of changes in production arrangements, for example driven by digitalization and globalization. There will also be direct connections between the data in labour market tables and accounting for a number of other aspects of well-being and sustainability including unpaid household service work, human capital and education and training expenditures. Chapter 16 on Labour provides further discussion of labour market tables.

4. Health care

2.91 As health is commonly considered an important element of people's well-being, it is important to have more detailed insights concerning the production and outputs of the health care systems in countries, the units involved, and how this activity is being financed. To this end, health accounts can be compiled that provide more detailed information on health care final consumption expenditure data (as presented in the integrated framework of national accounts) in terms of functions, providers and financing schemes, following the guidance and treatments of *A System of Health Accounts 2011* as described in chapter 34 on Measuring well-being. The focus of measurement here is on the outputs of a country's health system rather than the health outcomes that might be reported in terms of expected life years and similar statistics. While the provision of health care may not always be the primary determinant of health outcomes, the information from health accounts can still give direct insight into the nature of the societal response to securing those outcomes.

2.92 On the basis of this information, important indicators can be developed that provide users with relevant insights into the provision of health care in countries, such as health care expenditures as a share of GDP, per capita or per household group, expenditure by health care function, the shares between health care expenditures paid out of pocket versus the payments made by private insurance, general government or non-profit institutions serving households (NPISHs). To support derivation of more cross-cutting indicators, it is also recommended to ensure the inclusion of measures in physical terms, such as employment in health and social care and number of hospital beds available. Chapter 34 provides further discussion of health care accounts.

5. Unpaid household service work

2.93 The integrated framework of national accounts excludes unpaid household service activities (except for owner-occupied housing services) from its production boundary due to challenges in measurement and the view that their inclusion may detract from, rather than add to, the usefulness of the data from the integrated framework of the SNA for the primary purposes for which it is designed, that is macro-economic policy and analysis. However, understanding this work is crucial to the analysis of household well-being. Individuals' well-being is affected by both paid and unpaid work, with each feeding into goods and services consumed by households. Furthermore, measurement of unpaid work may contribute to a fuller understanding of economic growth, factoring in the impact of shifts across the production boundary used in the integrated framework of national accounts (e.g., for preparing meals).

2.94 To support analysis of these activities, accounts for unpaid household service work can be compiled to complement measures of household production activity included in the integrated framework of national accounts. Data from these accounts can be used to derive complementary estimates of GDP as well as extended measures of household disposable income that reflect the implicit income derived from unpaid household service work. It is also recommended to include estimates of consumer durables as used in the production of unpaid household work on the balance sheet, as part of the extended accounts. Chapter 34 provides further discussion of accounting for unpaid household service work.

6. Education and training

2.95 From an economic viewpoint, education is important for improving both career opportunities and living conditions by gaining knowledge and skills that can be used in day-to-day life. Furthermore, it provides a sense of self-fulfilment that may also enhance well-being. Many people spend large portions of their life in the education system, so it is important to fully understand the production and outputs of these institutions, the units providing the services, and how activities are financed.

2.96 Accounting for education and training can be undertaken through the compilation of thematic tables. These tables present data on output by provider and purpose, education expenditure by purchaser and purpose, financing of education expenditure by sector and purpose, and cost structures of education output by purpose. Chapter 34 provides further discussion of accounting for education and training expenditures.

7. Human capital

2.97 Assessing the role of human capital in the economy is gaining increasing prominence in discussions on productivity and sustainable development. Generally speaking, there is a need for a better understanding of the role of human capital in production and its relationship to other knowledge-based capital included in the SNA. How human capital is created, how it affects labour markets, and how it relates to the sustainability of future growth paths are all key topics of interest. As an important asset for households, it provides career opportunities, and benefits day-to-day activities.

2.98 To support investigation of these aspects of sustainability, extended tables on human capital can be compiled, encompassing stock estimates in both volumes and current prices and reflecting different demographic dimensions (e.g., gender, age and educational attainment). Two approaches to estimating stocks of human capital may be applied, a cost-based approach and a lifetime income approach. Further discussion on accounting for human capital is provided in chapter 35 on Measuring the sustainability of well-being.

Chapter 3: Overview of the integrated framework

A. Introduction

3.1 This chapter provides an overview of the accounting framework of the SNA and in doing so gives an overview of most of the following chapters also.

- It introduces the conceptual elements that form the building blocks of the accounting system and the rules of accounting to be followed. They are further elaborated in section B and C and in their full detail in part II of these standards (chapters 4, 5 and 6).
- It describes the standard view of integrated framework of national accounts, i.e., the sequence of economic accounts and related tables, which constitute the main elements of its accounting structure. Each account is introduced with a description of the nature of the account and an insight into the sort of analysis the account can yield. The accounts, including concise information on elaborating and communicating the accounts, are described in section D and then in part III of these standards (chapters 7 to 21).
- Thereafter, section E provides a short introduction to crosscutting issues which are described in more detail in part IV of these standards (chapters 22 to 27).
- Section F then provides a short introduction to part V of these standards, which comprises of chapters 28 to 33. Each of these chapters provides more detail on one of the main sectors, including the transactions and stocks between residents and non-residents (the rest of the world). These chapters also provide further information, where relevant, on the relationship with other macroeconomic standards
- Finally, this chapter shows some of the ways in which the sequence of economic accounts, the supply and use tables and the labour market tables may be applied flexibly, depending on specific country requirements. In particular thematic and extended accounts are introduced. These extensions and applications of the integrated framework of the SNA are described briefly in section G of this chapter as well as, more extensively, in part VI of these standards (chapters 34 to 39).

3.2 As explained in the introductory chapter 1, the integrated framework of national accounts describes the essential phenomena which constitute economic behaviour: production, consumption, accumulation and the associated concepts of income and wealth. The SNA aims to provide a representation of this set of phenomena and their interrelations that is simplified to aid comprehension but still covers all important considerations. To achieve this, the integrated framework of national accounts must satisfy two conditions; it must be integrated and consistent.

3.3 To be integrated, the same concepts, definitions and classifications must be applied to all accounts and sub-accounts. For example, once it is decided dwellings are treated as assets, all dwellings must give rise to housing services that are included within the production boundary, regardless of whether the dwellings are occupied by the owners or are rented on the market. Equally, all give rise to income that must be treated in the same way in the integrated framework of the SNA, regardless of the relationship between the owner and the occupier.

3.4 To be consistent, each economic flow or stock level appearing in the integrated framework of the SNA must be measured identically for the parties involved. This consistency is achieved by applying throughout the integrated framework the same concepts and definitions and also by using a single set of accounting rules for all entries in the integrated framework. In practice, the actual data coming from the accounts or statistics provided by elementary units will not be fully consistent for various reasons and so achieving the consistency required by the SNA requires a large amount of additional work.

1. Analysing flows and stocks

3.5 Basically, the purpose of a system of national accounts is to record economic flows and stocks. Economic flows can be thought of in various ways. Consider the question “Who does what?” “Who” refers to the

economic agent engaged in doing something, the operator. "What" is connected with the kind of action this agent is undertaking. In a few cases, the answer to this simple question provides a good preliminary characterization of an economic flow. However, in general the question is too simple to provide even a rough economic description of a specific flow. Take the example of somebody buying a loaf of bread. In order to characterize the flow, it is necessary to consider from whom this loaf of bread is bought (a baker or a supermarket) and what is given in exchange (a coin, a note, a payment with debit card, or an electronic payment). So the starting question is transformed into "Who does what with whom in exchange for what?" This rather simple flow involves two operators (a buyer, a seller), two main actions (a purchase, a sale), two secondary actions (a payment, a receipt) and two objects (bread, a coin, a note, or a payment with debit card). Again, a complete description would require more information, at least the weight, kind and price of the bread.

3.6 The picture in the real world is still more complicated. Before this flow occurred, the seller had a certain quantity of bread in his shop; afterwards he has less bread but more money. The buyer had a certain amount of money, now he has less money but some bread (before eating it). So the flow between them has changed their initial situations. This means that flows cannot be looked at in isolation; the situations before and after a flow occurs need to be considered. At those two points in time, one must ask the question "Who has what?" The baker not only has bread and currency, he also has a house with the shop, baking equipment, some flour, a deposit in a bank, a car, etc. In other words, he has (he owns) a certain stock of objects. The same is true for the buyer. In addition to what they are in themselves, flows modify stocks. Flows and changes in stocks are intrinsically connected. The previous question is again transformed into "Who does what with whom in exchange for what with what changes in stocks?"

3.7 However, the various ways of looking at this example have not yet been exhausted. Before the baker can sell bread, he has to bake it. He uses flour, water, electricity, baking equipment, etc. So, an additional question is "Who does what by what means?" What he does can also be characterized in two ways: his activity (to bake) and the result of it (a product: bread). With respect to the buyer one can ask "Why does he buy bread?" The obvious purpose is to eat, as food; however, it could be to give to a beggar, as charity. This raises the question "Who does what for what purpose?"

3.8 Adding all the questions together results in a rather complex combination of simple links: "Who does what, with whom, in exchange for what, by what means, for what purpose, with what changes in stocks?" Answering these questions for all economic flows and stocks and operators in a given economy would provide an enormous amount of information describing the complete network of economic interrelations. However, it would require an enormous amount of basic information, which is not always available nor complete in that it may cover only certain aspects of the complex chain of questions. Further, it is necessary to organize the recording of economic flows and stocks in a comprehensible way, as discussed in the next section.

2. Recording flows and stocks

3.9 Users' needs set certain requirements for the accounting framework. The first requirement is that it should provide a picture of the economy, but the picture must be simplified in order to be both comprehensible and manageable. The second requirement is that it should faithfully represent economic behaviour by covering all important aspects in a balanced way without neglecting or giving too little emphasis to some aspects or giving others too much prominence. Finally, it should portray all significant economic interrelations and the results of economic activity. Although meeting these requirements is necessary, they are somewhat contradictory. Achieving the right balance between them is not easy. Too great a simplification can lose sight of or neglect important aspects of economic behaviour; too detailed a portrayal of reality can overburden the picture and reduce insight; too much sophistication can lower comprehension and mislead some users; and so on.

3.10 To meet these requirements, the SNA uses a limited number of basic categories to analyse and aggregate certain aspects (Who? What? What purpose? What stocks?) of the very numerous elementary flows. However, the integrated framework of the SNA simplifies the picture it gives of the economic interrelations by not recording the "from-whom-to-whom?" question in a fully systematic way; that is, it does not always depict the network of flows between the various types of operators. Consider three units, A, B and C, each

of which makes payments of the same type to the other two; they might be three shopkeepers, for example, who sell different types of goods. Suppose A buys 2 from B and 3 from C; B buys 6 from A and 1 from C; C buys 4 from each of A and B. A full articulation of the flows could be captured in a three-by-three table as follows:

	A	B	C	Total purchases
A		2	3	5
B	6		1	7
C	4	4		8
Total sales	10	6	4	20

3.11 Although only the purchases were specified, it follows that the receipts of each unit are also available in the table. The totals in the right-most column show the total purchases of each of the three units and the bottom-most row shows the total receipts by each of the three units. The sum of each must, obviously, be the same since each is the sum of all entries within the table. Within the sequence Fof economic accounts, the full detail of the flows from each of A, B and C to each of the others is not generally shown; it is sufficient to show only the totals in the right-most column and the bottom-most row and know that these must balance.

3.12 In some presentations, particularly those using a matrix format of presentation, some of these extra details may be shown. Discussion of this appears in chapter 15 on Supply and use tables, chapter 36 on Input-output tables and chapter 37 on From-whom-to-whom tables and related financial indicators. Even in the sequence of economic accounts, the full detail may be available. For example, if in some case A, B and C do not interact with one another but only with another unit G, as is the case in the payment of taxes, then there are only four entries to be shown; the payments by each of A, B and C and the receipts by G.

3.13 Another case where the integrated framework of the SNA introduces a simplification is in terms of the "what in exchange for what?" question; that is, it does not indicate, for example, the specific nature of the financial counterpart (currency or deposit or short-term loan, etc.) for the purchases of goods and services or the payment of taxes.

3.14 The fact that the framework of the SNA is integrated, although articulated in only two and not three dimensions, does not reduce its consistency requirements. In effect, the purpose of the integrated framework of the SNA is to derive national accounts that are as consistent as they would be if they were fully articulated; each economic flow or stock should be measured identically for both parties involved. The consistency in the integrated framework of the SNA is achieved by applying the same concepts and definitions throughout and also by using a single strict set of accounting rules.

B. The conceptual elements of the integrated framework of the SNA

3.15 The integrated framework of the SNA contains a number of conceptual elements that determine the accounting framework and permit various aspects of the questions raised above to be answered. These concepts are:

- Institutional units and sectors (*who*?);
- Transactions and other flows (*what*?);
- Assets and liabilities (*what stocks*?);
- Products and producing units (other aspects of *who* and *what*?);
- Purposes (*why*?).

They are presented in turn.

1. Institutional units and sectors

3.16 The fundamental units identified in the integrated framework of the SNA are the economic units that can

engage in the full range of transactions and are capable of owning assets and also typically capable of incurring liabilities on their own behalf. These units are called institutional units. Further, because they have legal responsibility for their actions, institutional units are centres of decision-making for all aspects of economic behaviour. In practice, some institutional units are controlled by others and thus in such cases autonomy of decision is not total and may vary over time. Legally independent holding of assets and liabilities and autonomous behaviour do not always coincide. In the integrated framework of the SNA, preference is generally given to the first aspect because it provides a better way to organize the collection and presentation of statistics even if its usefulness is limited in some cases.

Institutional sectors

3.17 The institutional units are grouped together to form institutional sectors, on the basis of their principal functions, behaviour and objectives:

- *Non-financial corporations* are institutional units that are principally engaged in the production of market goods and non-financial services.
- *Financial corporations* are institutional units that are principally engaged in the production of market financial services including financial intermediation. It also includes the central bank, even though the central bank mainly produces non-market output.
- *General government* consists of institutional units that, in addition to fulfilling their political responsibilities and their role of economic regulation, produce services (and possibly goods) for individual or collective consumption mainly on a non-market basis and redistribute income and wealth.
- *Households* are institutional units consisting of one individual or a group of individuals. All physical persons in the economy must belong to one and only one household. The principal functions of households are to supply labour, to undertake final consumption and, as entrepreneurs, to produce market goods and non-financial (and possibly financial) services. The entrepreneurial activities of a household consist of unincorporated enterprises that remain within the household except under certain specific conditions.
- *Non-profit institutions serving households (NPISHs)* are legal entities that are principally engaged in the production of non-market services for households or the community at large and whose main resources are voluntary contributions.

3.18 Each sector contains a number of subsectors distinguished according to a hierarchical classification (described in chapter 5 on Institutional units and sectors, economic territory and residence). A subsector comprises entire institutional units, and each institutional unit belongs to only one subsector though alternative groupings are possible. The distinction between public, national private and foreign-controlled corporations and between various socio-economic groups of households is included in the SNA in order to respond to policy concerns.

Delimitation of the total economy and the rest of the world

3.19 The total economy is defined in terms of institutional units. It consists of all the institutional units which are resident in the economic territory of a country. The economic territory of a country, although consisting essentially of the geographical territory, does not coincide exactly; some additions and subtractions are made (see chapter 5 on Institutional units and sectors, economic territory and residence). The concept of residence in the integrated framework of the SNA is not based on nationality or legal criteria. An institutional unit is said to be a resident unit of a country when it has a centre of predominant economic interest in the economic territory of that country; that is, when it engages for an extended period (one year or more being taken as a practical guideline) in economic activities on this territory. The institutional sectors referred to above include only resident units.

3.20 Resident units may engage in transactions with non-resident units (that is, units that are residents of other economies). These transactions are the external transactions of the economy, which may also result in

changes in stocks/positions of assets and liabilities between resident units and non-resident units. The relevant transactions and (other changes in) stocks/positions are grouped in the account of the rest of the world. Strictly speaking, the rest of the world is the account of transactions occurring between resident and non-resident units, but it may also be seen as the whole group of non-resident units that enter into transactions with resident units. In the accounting structure of the integrated framework of the SNA, the rest of the world plays a role similar to that of an institutional sector, although non-resident units are included only in so far as they are engaged in transactions with resident institutional units. These transactions also result in (changes in) stocks, or positions, of assets and liabilities between resident units and non-resident units.

2. Transactions and other flows

3.21 Institutional units fulfil various economic functions; that is, they produce, consume, save, invest, etc. They may engage in various types of production (agriculture, manufacturing, etc.) as entrepreneurs, providers of labour or suppliers of capital. In all aspects of their economic functions and activities, they undertake a great number of elementary economic actions. These actions result in economic flows, which, however they are characterized (wages, taxes, fixed capital formation, etc.), create, transform, exchange, transfer or extinguish economic value; they involve changes in the volume, composition or value of an institutional unit's assets or liabilities. The economic value may take the form of ownership rights on physical objects (a loaf of bread, a dwelling) or intangible assets (a film original), or of financial claims (liabilities being understood as negative economic value). In all cases, economic value is potentially usable to acquire goods or services, pay wages or taxes, etc.

3.22 Most economic actions are undertaken by mutual agreement between institutional units. They are either an exchange of economic value or a voluntary transfer by one unit to another of a certain amount of economic value without a counterpart. These actions undertaken by mutual agreement between two institutional units are called transactions in the SNA. The SNA also treats certain economic actions involving only a single institutional unit as transactions. They are described as internal, or intra-unit, transactions. For example, own-account fixed capital formation is treated as a transaction between a unit in its capacity as a producer with itself in its capacity as an acquirer of fixed capital. Such transactions are similar in nature to actions undertaken by mutual agreement by two different institutional units.

3.23 However, not all economic flows are transactions. For example, certain actions undertaken unilaterally by one institutional unit have consequences on other institutional units without the latter's consent. The integrated framework of the SNA records such actions only to a limited extent, essentially when governments or other institutional units take possession of the assets of other institutional units, including non-resident units, without full compensation. In fact, unilateral economic actions bearing consequences, either positive or negative, on other economic units (externalities) are much broader but such externalities are not recorded in the integrated framework of the SNA. Human action may result in the transfer of natural assets to economic activities and the subsequent transformation of these assets. These phenomena are recorded in the integrated framework of the SNA as economic flows, bringing in economic value. Non-economic phenomena, such as wars and natural disasters, may destroy economic assets, and this extinction of economic value must be accounted for. The value of economic assets and liabilities may change during the time they are held as stocks, as a consequence of changes in prices. These and similar flows that are not transactions, which are called other economic flows in the integrated framework of the SNA, are described in chapter 13 on Other changes in assets and liabilities accounts.

3.24 Economic flows can be actual, observable flows or they can be built up or estimated for analytical purposes. Certain flows may be directly observed in value terms. This is the case for monetary transactions between two institutional units, such as a purchase or sale of a good or the payment of a tax. Other two-unit flows are observable but cannot be immediately valued. These flows include barter of goods and services or education services consumed by students and provided free of charge by government; a value in money terms has to be attributed to them. Barter is an example of a two-unit flow involving a "quid pro quo" that is, a flow in one direction is linked to a counterpart flow in the opposite direction; a social assistance benefit in cash is a two-unit flow that does not involve a quid pro quo. Another kind of flow involves only one institutional unit. Such flows may be physically observable, as in the case of output for own-account consumption or capital formation, or destruction by natural catastrophes. A value has to be attributed to them (this may be fairly easy in certain cases, such as when output is mostly sold). Other intra-unit, or internal, flows may not be observable

as such; accounting entries are then constructed in order to measure economic performance correctly. This is the case for the depreciation and depletion or the revaluation of assets and liabilities. Certain inter-units flows, such as reinvested earnings on foreign direct investment, are also accounting entries created for analytical purposes. Finally, some observable monetary transactions are not recorded as they are observed in practice, because they are of a composite nature (interest on loans and deposits provided by financial intermediaries, insurance premiums) or their legal nature does not correspond to their economic one (financial leasing). Consequently, for the integrated framework of the SNA, they are split up into various components and their classification and routing are modified.

3.25 Although monetary transactions have a basic role in the valuation of flows in the integrated framework of the SNA, non-monetary transactions are also significant. They include flows of goods and services that take place between institutional units for which values have to be estimated and also some flows that are assumed to take place within units. The relative importance of non-monetary transactions varies according to the type of economy and the objectives pursued by the accounting system. Although the volume of non-monetary flows is generally greater for less developed economies than for developed ones, even for the latter it is not negligible.

Main types of transactions and other flows

3.26 Elementary transactions and other flows are very numerous. They are grouped into a relatively small number of types according to their nature. The main classification of transactions and other flows in the integrated framework of the SNA includes four first-level types, with each subdivided according to a hierarchical classification. It is designed to be used systematically in the accounts and tables of the integrated framework of national accounts and cross-classified with institutional sectors, industry and product, and purpose classifications. A full set of transactions and their codes appear in annex 1.

3.27 Transactions in goods and services (products) describe the origin (domestic output or imports) and use (intermediate consumption, final consumption, capital formation or exports) of goods and services. By definition, goods and services in the integrated framework of the SNA are always a result of production, either domestically or abroad, in the current period or in a previous one. The term products is thus a synonym for goods and services.

3.28 Distributive transactions consist of transactions by which the value added generated by production is distributed to labour, capital and government and transactions involving the redistribution of income and wealth (taxes on income and wealth and other transfers). The integrated framework of the SNA draws a distinction between current and capital transfers, with the latter deemed to redistribute saving or wealth rather than income. (This distinction is discussed in detail in chapter 9 on Transfer income accounts.)

3.29 Transactions in financial instruments (or financial transactions) refer to the net acquisition of financial assets or the net incurrence of liabilities for each type of financial instrument. Such changes often occur as counterparts of non-financial transactions. They also occur as transactions involving only financial instruments. Transactions in contingent assets and liabilities are not considered transactions in the integrated framework of the SNA (see chapter 12 on Financial account).

3.30 Other accumulation entries cover transactions and other economic flows not previously taken into account that change the quantity or value of assets and liabilities. They include acquisitions less disposals of non-produced non-financial assets, other economic flows of non-produced assets, such as discovery of mineral and energy resources or transfers of other natural resources to economic activities, the effects of non-economic phenomena such as natural disasters and political events (wars for example) and finally, they include holding gains or losses, due to changes in prices, and some minor items (see chapter 13 on Other changes in assets and liabilities accounts).

Characteristics of transactions in the integrated framework of the SNA

3.31 In order to provide more useful answers to the questions raised in the analysis of flows, some transactions are not recorded in the integrated framework of the SNA as they might be directly observed. The integrated framework often uses categories which are more closely identified with an economic concept. For example,

gross fixed capital formation, a subcategory of transactions in goods and services, is broader than the limited coverage thought of as "purchases of fixed assets". In order to be closer to an economic concept, it covers the acquisition of new and existing fixed assets, through purchases, barter transactions or own-account capital formation, less the disposal of existing assets, through sales or barter transactions.

3.32 As the previous example shows, the integrated framework of the SNA also often uses categories which are compacted, that is, are the result of combining a number of elementary transactions. The term changes in inventories, for example, refers to the difference between entries into and withdrawals from inventories and recurrent losses. The same netting happens for transactions in financial instruments. All transactions in an instrument held as an asset (or as a liability) are grouped under the heading of this instrument. The item "loans", for example, covers issuance of new loans, conversions, and redemptions or cancellations of existing loans. Finally, some categories of transactions in the integrated framework of the SNA, such as distributive transactions concerning interest and non-life insurance premiums, require an actual transaction to be split into parts.

3. Assets and liabilities

3.33 Assets and liabilities are the components of the balance sheets of the total economy and institutional sectors. In contrast to the accounts that show economic flows, a balance sheet shows the stocks of assets and liabilities held at one point in time by each unit or sector or the economy as a whole. Balance sheets are normally constructed at the start and end of an accounting period but they can in principle be constructed at any point in time. However, stocks result from the accumulation of prior transactions and other flows, and they are modified by future transactions and other flows. Thus stocks and flows are closely related.

3.34 The coverage of assets is limited to those assets which are subject to ownership rights and from which economic benefits may be derived by their owners by holding them or using them in an economic activity as defined in the integrated framework of the SNA. Consumer durables, human capital, and also those natural resources that are not capable of bringing economic benefits to their owners, are outside the scope of assets in the integrated framework of national accounts.

3.35 The classification of assets distinguishes, at the first level, financial and non-financial assets (see chapter 11 on Capital account). Most non-financial assets generally serve two purposes. They are primarily objects usable in economic activity and, at the same time, serve as stores of value. Financial assets are necessarily and primarily stores of value, although they may also fulfil other functions.

4. Products and producing units

Products

3.36 Goods and services, also called products, are the result of production. They are exchanged and used for various purposes; as inputs in the production of other goods and services, as final consumption or for investment. The integrated framework of the SNA makes a conceptual distinction between market, own final use and non-market goods and services, allowing in principle any kind of good or service to be any of these three types.

Producing units

3.37 Institutional units such as corporations may produce various types of goods and services. These goods and services result from processes of production which may differ as regards materials and supplies consumed, kind of equipment and labour employed and techniques used. In other words, they may come from different production activities. In order to study transactions in goods and services in detail, the SNA uses the *CPC*.

3.38 To study production and production functions in detail, it is necessary to refer to more homogeneous units. The ideal solution would be to be able to identify and observe units that engaged in only one production activity. As it is also necessary to give a picture of the distribution of production in space, this unit should also be in a single location or nearby sites. In practice, it is not always feasible to distinguish units of

production engaged in a single activity, and for which the necessary data are available, inside multiactivity units. Inevitably, therefore, some secondary activities that cannot be separated are covered. For that reason, for the detailed study of production, the integrated framework of the SNA uses a unit which, in addition to its principal activity, may cover secondary activities. This unit is the establishment.

3.39 Establishments that have the same principal activity are grouped into industries according to the *ISIC*.

3.40 Given the fundamental role played by the market in modern economies, the integrated framework of the SNA distinguishes, as an essential feature of its structure, between establishments that are market producers, producers for own final use and non-market producers. Market establishments produce goods and services mostly for sale at prices that are economically significant. Producers for own final use produce goods and services mostly for final consumption or fixed capital formation by the owners of the enterprises in which they are produced. Non-market establishments supply most of the goods and services they produce without charge or at prices that are not economically significant.

3.41 There is a hierarchical relationship between institutional units and establishments. An institutional unit contains one or more entire establishment(s); an establishment belongs to one and only one institutional unit.

3.42 The process of producing goods and services, including total supply and total use of goods and services, classified by products and, for the domestic production process, by industries, is the principal focus of supply and use tables (see chapter 15).

5. Purposes

3.43 The concept of purpose, or function, relates to the type of need a transaction or group of transactions aims to satisfy or the kind of objective it pursues. Transactions are first analysed in the integrated framework of national accounts according to their nature. Then, for certain sectors or kind of transactions, they are analysed from the expenditure side, by purpose, answering the earlier question "for what purpose?" Classification by purpose is described in the context of the supply and use tables in chapter 15.

C. Rules of accounting

1. Introduction

Terminology for the two sides of the accounts

3.44 The integrated framework of the SNA utilizes the term revenues for transactions which add to the amount of economic value of a unit or a sector. For example, wages and salaries are a revenue for the unit or sector receiving them. Revenues are by convention shown on the right-hand side of the current accounts. The left-hand side of the accounts, which includes transactions that reduce the amount of economic value of a unit or sector, is termed expenditures. To continue the example, wages and salaries are an expenditure for the unit or sector that must pay them.

3.45 Balance sheets are presented with liabilities and net worth (the difference between assets and liabilities) on the right-hand side and assets on the left-hand side. Comparing two successive balance sheets gives changes in liabilities and net worth and changes in assets.

3.46 The accumulation accounts and balance sheets being fully integrated, the right-hand side of the accumulation accounts is called changes in liabilities and net worth and their left-hand side is called changes in assets. In the case of transactions in financial instruments, the changes in liabilities are often referred to as (net) incurrence of liabilities and the changes in assets as (net) acquisition of financial assets.

Change of ownership and the recording of transactions in goods and services

3.47 A good may be held and be processed by a unit that does not have title to the ownership of the good. One example is a good given to a unit for repair. The activity of the repairer is only the cost incurred to effect the repair and the cost of the good being repaired does not feature in the accounts of the repairer. This is obvious

and uncontroversial for every day types of repairs such as repairing shoes or a vehicle. However, the same principle also applies when one unit processes goods on behalf of another unit. For example, one unit may receive a set of components from another unit and return the assembled product.

3.48 Within the integrated framework of the SNA, a distinction is made between legal ownership and economic ownership. The criterion for recording the transfer of products from one unit to another in the integrated framework of national accounts is that the economic ownership of the product changes from the first unit to the second. The legal owner is the unit entitled in law to the economic benefits embodied in the value of the product. A legal owner may, though, contract with another unit for the latter to accept the risks and rewards of using the product in production in return for an agreed amount that has a smaller element of risk in it. Such an example is when a bank legally owns a plane but allows an airline to use it in return for an agreed sum. It is the airline that then must take all the decisions about how often to fly the plane, to where and at what cost to the passengers. The airline is then said to be the economic owner of the plane even though the bank remains the legal owner. In the accounts, it is the airline and not the bank that is shown as purchasing the plane. At the same time, a loan, equal in value to payments due to the bank for the duration of the agreement between them, is imputed as being made by the bank to the airline.

3.49 The same principle applies to goods sent abroad for processing. If the processor is not concerned about how and where and for how much the item he is assembling is sold, the economic ownership remains with the legal owner. Even though the goods may physically pass from one country to another, they are not treated as imports and exports because the economic ownership has not changed.

3.50 Within a large enterprise with several specialized establishments, it is not immediately obvious whether a delivery of goods from one establishment to another is to be recorded or not. Since all the establishments have the same ownership, the distinction between economic and legal ownership needs refining. The criterion used is to record a delivery when the receiving unit assumes the responsibility, in terms of economic risks and rewards, of the items delivered. If the receiving unit does not accept this responsibility, for example by returning the processed items to the original sending unit, then it is only performing a service on the items and they are not recorded as being delivered from the first unit to the second.

Double entry or quadruple entry accounting

3.51 For a unit or sector, national accounting is based on the principle of double entry, as in business accounting. Each transaction must be recorded twice, once as a revenue (or a change in liabilities) and once as an expenditure (or a change in assets). The total of transactions recorded as revenues or changes in liabilities and the total of transactions recorded as expenditures or changes in assets must be equal, thus permitting a check of the consistency of the accounts. Economic flows that are not transactions have their counterpart directly as changes in net worth. This is shown in section D below (and also in chapter 13 on Other changes in assets and liabilities accounts, which describes the other changes in the volume of assets and liabilities account and the revaluation account).

3.52 The implications of the double entry principle are easy to grasp in a number of cases. A household's purchase on credit of a consumer good will appear as an expenditure under final consumption expenditure and as an incurrence of a liability under loans. If this good is paid for in cash, however, the picture is less simple. The counterpart of an expenditure under final consumption is now a negative acquisition of assets, under currency and deposits. Other transactions are more complicated. Output of goods is recorded as a revenue in the account of a producer, its counterpart among expenditures is recorded as a positive change in inventories. When the output is sold, there is a negative change in inventories, that is, a negative acquisition of non-financial assets, balanced by a positive acquisition of financial assets, for instance under currency and deposits. In many instances, as explained earlier, the difficulty of seeing how the double entry principle applies is due to the fact that the categories of transactions in the integrated framework of the SNA are compacted.

3.53 In principle, the recording of the consequences of an action as it affects all units and all sectors is based on a principle of quadruple entry accounting, because most transactions involve two institutional units. Each transaction of this type must be recorded twice by each of the two transactors involved. For example, a social benefit in cash paid by a government unit to a household is recorded in the accounts of government as an

expenditure under the relevant type of transfers and a negative acquisition of assets under currency and deposits; in the accounts of the household sector, it is recorded as a revenue under transfers and an acquisition of assets under currency and deposits. The principle of quadruple entry accounting applies even when the detailed from-whom-to-whom relations between sectors are not shown in the accounts. Correctly recording the four transactions involved ensures full consistency in the accounts. (See section E of chapter 4 on Flows, stocks and accounting rules for more details.)

3.54 As noted in the introduction, the data available to the national accounts compiler may not in practice initially satisfy the consistency requirements of the SNA. The accounts of the nation are not kept in the same way as a business unit or government, that is, by actually recording all flows occurring in a given period. They rely on accounts of various units that are not always consistent, complete or even available. For household accounts in particular, other statistics such as those from household surveys have to be used. Reconciling disparate data sources within the consistency constraints imposed by the quadruple entry accounting principle is fundamental to compiling a complete set of accounts.

2. Time of recording

3.55 One implication of the quadruple entry accounting principle is that transactions, or other flows, have to be recorded at the same point of time in the various accounts in question for both units involved. The same applies to stocks of financial assets and liabilities.

3.56 The general principle in national accounting is that transactions between institutional units have to be recorded when claims and obligations arise, are transformed or are cancelled. This time of recording is called an accrual basis. Transactions internal to one institutional unit are equivalently recorded when economic value is created, transformed or extinguished. Generally speaking, all transactions, however they are described, can always be viewed as dealing with economic value.

3.57 One has thus to distinguish carefully between the point in time at which a transaction and the corresponding cash movement take place. Even when a transaction (a purchase or sale of a good, for example) and the payment or receipt are simultaneous, the two aspects exist. The purchaser incurs a liability, the seller acquires a claim as a counterpart of the delivery of the good. Then the liability and the claim are cancelled by the payment. In most cases there is a delay between the actual transaction and the corresponding payment or receipt. In principle, national accounts record actual transactions on an accrual basis, not on a cash basis. Conceptually national accounts follow the same principle as business accounting.

3.58 Although the principle is clear, its implementation is far from simple. Institutional units do not always apply the same rules. Even when they do, differences in actual recording may occur for practical reasons such as delays in communication. Consequently, transactions may be recorded at different times by the transactors involved, sometimes even in a different accounting period. Discrepancies exist which national accounts must eliminate by after-the-fact adjustments. In addition, because the time at which a claim or liability arises is not always unambiguous, further implementation problems arise. The rules and conventions adopted in the integrated framework of the SNA for particular transactions are specified in subsequent chapters, in particular in chapter 4 on Flows, stocks and accounting rules.

3. Valuation

General principles

3.59 It also follows from the quadruple entry accounting principle that a transaction must be recorded at the same value through all the accounts of both sectors involved. The same principle applies to assets and liabilities. It means that a financial asset and its liability counterpart have to be recorded for the same amount in the creditor and the debtor accounts.

3.60 Transactions are valued at the actual price agreed upon by the transactors. Exchange values, or the observed market prices, are thus the basic reference for valuation in the integrated framework of the SNA. In the absence of market transactions, valuation is made according to costs incurred (for example, non-market services produced by government) or by reference to observed market prices for analogous goods or services

(for example, services of owner-occupied dwellings).

3.61 Assets and liabilities are recorded at current values at the time to which the balance sheet relates, not at their original valuation. Theoretically, national accounts are based on the assumption that the values of assets and liabilities are continuously up-rated to current values, even if in fact up-rating occurs only periodically. The appropriate valuation basis for assets and liabilities is the value at which they might be bought in markets at the time the valuation is required. Ideally, values observed in markets or estimated from observed market values should be used. However, often this is not possible, and the current values may need to be approximated for balance sheet valuation in two other ways: (i) by accumulating and revaluing transactions over time, or (ii) by estimating the discounted present value of future economic benefits expected from a given asset. The latter methods are of particular relevance for valuing non-financial assets (see also the annex to chapter 4 on Flows, stocks and accounting rules and chapter 14 on Capital account).

3.62 Internal transactions are valued at current values at the time these transactions occur, not at the original valuation. These internal transactions include entries into inventories, withdrawals from inventories, intermediate consumption, depreciation and depletion.

3.63 For more information on the valuation principles and methodologies, see the annex of chapter 4 on Flows, stocks and accounting rules.

Methods for valuing output and transactions in goods and services

3.64 Various methods exist of treating the effect of taxes on products, subsidies on products and trade and transport margins on the valuation of transactions on products (goods and services).

3.65 The preferred method of valuation of output is at basic prices, although producers' prices may be used when valuation at basic prices is not feasible. The distinction is related to the treatment of taxes and subsidies on products. Basic prices are prices before taxes on products are added and subsidies on products are subtracted. Producers' prices include, in addition to basic prices, taxes less subsidies on products other than value added type taxes. Thus three valuations of output may be encountered; at basic prices, at producers' prices in the absence of value added type taxes, and at producers' prices in the presence of value added type taxes.

3.66 In the same set of accounts and tables, all transactions on the uses of goods and services (such as final consumption, intermediate consumption, capital formation) are valued at purchasers' prices. Purchasers' prices are the amounts paid by the purchasers, excluding the deductible part of value added type taxes. Purchasers' prices are the actual costs to the users.

3.67 The various methods of valuing output, with intermediate consumption always at purchasers' prices, imply consequences for the content and uses of value added (the difference between output and intermediate consumption) by a producer, a sector or an industry. When output is valued at basic prices, value added includes besides earned incomes due to labour and capital, only taxes less subsidies on production other than taxes less subsidies on products; when output is valued at producers' prices, value added includes taxes, less subsidies, on products other than value added type taxes (which means all taxes, less subsidies, on products when value added type taxes do not exist). A complementary definition of value added is at factor cost, which excludes taxes on production of any kind, though this concept is not used explicitly in the integrated framework of the SNA.

Volume measures and measures in real terms

3.68 Up until this point, only current values have been described. In addition, the SNA includes calculation of some transactions in volume terms, that is, the use of the systems of prices which prevailed in a past period. The changes over time in the current values of flows of goods and services and of many kinds of assets can be decomposed into changes in the prices of these goods and services or assets and changes in their volumes. Flows or stocks in volume terms take into account the changes in the price of each item covered. However, many flows or stocks do not have price and quantity dimensions of their own. Their current values may be deflated by taking into account the change in the prices of some relevant basket of goods and services or assets, or the change in the general price level. In the latter case, flows or stocks are said to be in real terms

(that is, they represent values at constant purchasing power). For example, the integrated framework of the SNA provides for the calculation of income in real terms. Interspatial comparisons raise similar but even more complex problems than inter-temporal comparisons because countries at different stages of development are involved.

3.69 Both inter-temporal and interspatial measures are discussed in chapter 18 on Measuring prices, volumes and productivity

4. Consolidation and netting

Consolidation

3.70 Consolidation may cover various accounting procedures. In general, it refers to the elimination from both expenditures and revenues of transactions which occur between units that are grouped together and to the elimination of financial assets and the counterpart liabilities.

3.71 As a matter of principle, flows between constituent units within subsectors or sectors are not consolidated. However, consolidated accounts may be compiled for complementary presentations and analyses. Even then, transactions appearing in different accounts are never consolidated so that the balancing items are not affected by consolidation. Consolidation may be useful, for example, for the government sector as a whole, thus showing the net relations between government and the rest of the economy. This possibility is elaborated in chapter 30 General government and the public sector.

3.72 Accounts for the total economy, when fully consolidated, give rise to the rest of the world account (external account).

Netting

3.73 Consolidation must be distinguished from netting. For current transactions, netting refers to offsetting expenditures against revenues. The integrated framework SNA does this only in a few specific instances; for example, taxes on products may be shown net of subsidies on products. For changes in assets or changes in liabilities, netting may be envisaged in two ways. The first case is where various types of changes in assets (for example, entries in inventories and withdrawals from inventories) or various types of liabilities (for example, incurrence of a new debt and redemption of an existing debt) are netted. The second case is where changes in financial assets and changes in liabilities (or, in the balance sheet, financial assets and liabilities themselves) related to a given financial instrument are netted. As a matter of principle, the SNA discourages netting beyond the degree shown in the classifications of the SNA. Netting financial assets (changes in financial assets) against liabilities (changes in liabilities) is especially to be avoided. Netting is discussed in chapter 4 on Flows, stocks and accounting rules and chapter 12 on Financial account.

The use of "net"

3.74 With very few exceptions, in the SNA the term "net" is used only in connection with the balancing items of the accounts in juxtaposition to the term "gross". The exceptions are the use of the expressions net worth, and net borrowing or net lending in relation to the accumulation accounts.

D. The accounts

1. Introduction

3.75 With the tools introduced in sections B and C above, all flows and stocks can be recorded. This is done in the accounts of the integrated framework of the SNA. Each account relates to a particular aspect of economic behaviour. It contains flows or stocks and shows the entries for an institutional unit, a group of units such as a sector or the rest of the world. Typically the entries in the account do not conceptually balance so a balancing item must be introduced. Balancing items are meaningful measures of economic performance in

themselves. When calculated for the whole economy, they constitute significant aggregates.

3.76 The integrated framework of national accounts can be divided into two main classes:

- The sequence of economic accounts; and
- The other parts of the integrated framework.

3.77 The sequence of economic accounts use the first three of the conceptual elements of the SNA described in section B (institutional units and sectors, transactions, and assets and liabilities) together with the concept of the rest of the world to form a wide range of accounts. These include the full sequence of economic accounts for institutional sectors, separately or collectively, the rest of the world and the total economy. The full sequence of economic accounts is described briefly below. A full description of each of the accounts concerned is the subject matter of chapters 7 to 14.

3.78 The other parts of the integrated framework bring in the three other conceptual elements from section B, that is, establishments, products and purposes as well as labour. The accounts covered here include the supply and use framework, which is the subject of chapter 15, labour market tables which are described in chapter 16, capital services (chapter 17) and functional analyses, whereby certain transactions of institutional sectors are presented according to the purpose they serve. These appear in a number of chapters including chapter 15 on Supply and use tables.

3.79 The sections following are devoted to:

- The full sequence of economic accounts;
- An integrated presentation of the accounts including the goods and services account, the accounts for the rest of the world and an examination of the aggregates of the integrated framework of the SNA; and
- The other main parts of the integrated framework.

2. The full sequence of economic accounts

3.80 Before presenting the full sequence of economic accounts for institutional units and sectors, some preliminary remarks are useful. The purpose of this subsection is to explain the accounting structure of the sequence of economic accounts in general, not to show the precise content of the accounts for each specific unit or sector. The accounting structure is uniform throughout the integrated framework of the SNA. It applies to all institutional units, subsectors, sectors and the total economy. However, some accounts may not be relevant for certain sectors. Similarly, not all transactions are relevant for each sector and, when they are, they may constitute revenues for some sectors and expenditures for others.

3.81 Another remark relates to the way the classification of transactions is used when presenting the general structure of the accounts. Section B above shows only the main categories of transactions, not the detailed ones which are displayed in the relevant chapters of the publication. However, in order to make the accounts clear, it is necessary to include a number of specific transactions. This is done by using the actual classification of transactions in the SNA at a level of detail sufficient for a good understanding of the accounts. Definitions of these transactions are not given at this stage unless absolutely necessary but appear in subsequent chapters.

3.82 It is also worth noting that balancing items can be expressed gross or net, the difference being depreciation and depletion. Conceptually, net balancing items are much more meaningful. However, gross concepts, specifically gross aggregates, are widely used and gross accounts are often estimated more easily and promptly than the net ones. In order to accommodate both solutions and to ease the integrated presentation of the accounts and aggregates, a double presentation of balancing items is allowed.

3.83 Finally, it has to be said that the sequence of economic accounts shows the accounting structure of the SNA; it is not necessarily a format for publishing the results.

The three sections of the sequence of economic accounts

3.84 The economic accounts are grouped into three categories: current accounts, accumulation accounts and balance sheets.

3.85 Current accounts deal with production, the generation, distribution and use of income. Each account after the first starts with the balancing item of the previous one recorded as revenues. The last balancing item is saving which, in the context of the integrated framework of the SNA, is that part of income originating in production, domestically or abroad, that is not used for final consumption.

3.86 Accumulation accounts cover changes in assets and liabilities and changes in net worth (the difference for any institutional unit or group of units between its assets and liabilities). The accounts concerned are the capital account, financial account, the other changes in the volume of assets and liabilities account and the revaluation account. The accumulation accounts show all changes that occur between two balance sheets.

3.87 Balance sheets present stocks of assets and liabilities and net worth. Opening and closing balance sheets are included with the full sequence of economic accounts. Even when balance sheets are not compiled, a clear understanding of the conceptual relationship between accumulation accounts and balance sheets is necessary if the accumulation accounts themselves are to be correctly elaborated.

The current accounts

The production account

3.88 The production account (shown in table 3.1) is designed to show value added as one of the main balancing items in the integrated framework of the SNA. Consequently, it does not cover all transactions linked with the production process, but only the result of production (output) and the using up of goods and services when producing this output (intermediate consumption). Intermediate consumption does not cover the progressive wear and tear of fixed capital and the depletion of natural resources. The latter are recorded as separate transactions (depreciation and depletion) which constitute the difference between the gross and net balancing items.

Table 3.1: The production account

Expenditures		Revenues	
P1		P1	Output
P2	Intermediate consumption	P2	
B1	*Value added*		

3.89 As already explained in section C, different types of valuation of output may be used according to the choice made between basic prices and producers' prices and, in the latter case, the existence or absence of value added type taxes. Consequently, the extent to which taxes (less subsidies) on products are included in value added differs.

3.90 All institutional sectors have a production account. However, in the production account of institutional sectors, output and intermediate consumption are shown in total only, not broken down by products.

3.91 The balancing item of the production account is value added. Like all balancing items in the current accounts, value added may be measured gross or net.

The distribution of income accounts

3.92 The process of distribution and redistribution of income is so important that it is worth distinguishing various steps and depicting them separately in different accounts. The distribution of income is decomposed into

three main steps: distribution of earned income, distribution of transfer income other than social transfers in kind, and distribution of social transfers in kind. As long as all kinds of distributive current transactions included in the integrated framework of the SNA are actually measured, increasing the number of accounts adds very little to the work already done, but it allows the introduction of balancing items that are meaningful concepts of income.

The earned income account

3.93 The earned income account shows how gross value added is distributed to labour, capital, government and, where necessary, flows to and from the rest of the world. In fact the earned income account is never presented as a single account but always as two sub-accounts. The first of these is the generation of earned income account (shown in table 3.2) in which value added is distributed to labour (remuneration of employees), capital and government (taxes, less subsidies, on production and imports as far as they are included in the valuation of output). The distribution to capital (and implicitly the compensation of the labour input provided by self-employed persons) appears in the balancing item in this account, operating surplus or mixed income.

Table 3.2: The generation of earned income account

Expenditures		Revenues	
		B1	*Value added*
D1	Remuneration of employees		
D2	Taxes on production and imports		
D3	Subsidies (-)		
B2	*Operating surplus*		
B3	*Mixed income*		

3.94 The allocation of earned income account (table 3.3) shows the remaining part of the distribution of earned income. It contains operating surplus or mixed income as a revenue. It records, for each sector, property income receivable and payable, and remuneration of employees and taxes, less subsidies, on production and imports receivable by households and government, respectively. Since transactions of this kind may appear in the rest of the world account, these must be included also.

Table 3.3: The allocation of earned income account

Expenditures		Revenues	
		B2	*Operating surplus*
		B3	*Mixed income*
D1		D1	Remuneration of employees
D2		D2	Taxes on production and imports
D3		D3	Subsidies (-)
D4	Property income	D4	Property income
D42dep (-)	Depletion borne by the legal owner	D42dep (-)	Depletion borne by the legal owner
B5	*Balance of earned incomes*		

3.95 The balancing item of the allocation of earned income account (and of the complete distribution of earned income account) is the balance of earned incomes.

3.96 For non-financial and financial corporations, the allocation of earned income account is further subdivided in order to show an additional balancing item, entrepreneurial income, which is closer to the concept of

current profit before tax familiar in business accounting. This balancing item and the related sub-accounts are shown in chapter 8 on Earned income accounts.

The income transfers other than social transfers in kind account

3.97 The income transfers other than transfers in kind account (table 3.4) covers redistribution of income through current transfers other than social transfers in kind, often involving government and NPISHs. Social transfers in kind are recorded in the social transfers in kind account. The income transfers other than social transfers in kind account records as revenues, in addition to balance of earned incomes, current taxes on income, wealth, etc. and other current transfers except social transfers in kind. On the expenditures side, the same types of transfers are also recorded. Since these transfers are revenues for some sectors and expenditures for others also, their precise content varies from one sector to another.

Table 3.4: The income transfers other than transfers in kind account

Expenditures		Revenues	
		B5	*Balance of earned incomes*
	Current transfers		Current transfers
D5	Current taxes on income, wealth, etc.	D5	Current taxes on income, wealth, etc.
D61	Social contributions less service charges	D61	Social contributions less service charges
D62	Social benefits other than social transfers in kind	D62	Social benefits other than social transfers in kind
D7	Other current transfers	D7	Other current transfers
B6	*Disposable income*		

3.98 It is worth explaining in some detail here the way social contributions are recorded in the integrated framework of the SNA. Although employers normally pay social contributions on behalf of their employees directly to the social insurance schemes, in the integrated framework these payments are treated as if they were made to employees who then make payments to social insurance schemes. In terms of the accounts, this means that they first appear as a component of remuneration of employees in the expenditure side of the generation of earned income account of employers and the revenue side of the allocation of earned income account of households (adjusted for external flows in remuneration of employees). They are then recorded as expenditures in the income transfers other than social transfers in kind account of households (and possibly of the rest of the world), and as revenues of the sectors managing social insurance schemes. All employers' social contributions follow this route. This way of recording transactions as if they followed another course is often called "rerouting".

3.99 The balancing item of the income transfers other than social transfers in kind account is disposable income. For households, this is the income that can be used for final consumption expenditure and saving. For non-financial and financial corporations, disposable income is income not distributed to owners of equity remaining after taxes on income are paid.

The social transfers in kind account

3.100 Because of the nature of the transactions concerned, this account is significant only for government, households and NPISHs. Social transfers in kind cover two more elements in the portrayal of the redistribution of income process. The first of these is non-market production by government and NPISHs of individual services and the second is the purchase by government and NPISHs of goods and services for transfer to households free or at prices that are not economically significant. The social transfers in kind account (table 3.5) records social transfers in kind as revenues for households and expenditures of government and NPISHs.

Table 3.5: The social transfers in kind account

Expenditures		Revenues	
		B6	*Disposable income*
D63	Social transfers in kind	D63	Social transfers in kind
B7	*Disposable income adjusted for social transfers in kind*		

3.101 The purpose of this account is fourfold. In the first place it aims at giving a clearer picture of the role of government and NPISHs as providers of goods and services to individual households. Secondly, it delivers a more complete measure of household income. Thirdly, it facilitates international comparisons and comparisons over time when economic and social arrangements differ or change. Fourthly, it gives a more complete view of the redistribution process between subsectors or other groupings of households. Redistribution of income via social transfers in kind can be looked upon as a third way of distributing income, in addition to the distribution of earned income and the redistribution of income via income transfers other than social transfers in kind.

3.102 The balancing item of the social transfers in kind account is disposable income adjusted for social transfers in kind.

The use of income accounts

3.103 The use of income account exists in two variants, the use of disposable income account (table 3.6) and the use of disposable income adjusted for social transfers in kind account (table 3.7). The use of disposable income account has the balancing item from the income transfers other than social transfers in kind account, disposable income, as a revenue. The use of disposable income adjusted for social transfers in kind account has the balancing item from the social transfers in kind account, disposable income adjusted for social transfers in kind, as a revenue. Both accounts show how, for the relevant sectors that undertake final consumption (that is, government, the central bank, NPISHs and households), disposable income or disposable income adjusted for social transfers in kind is allocated between final consumption and saving. In addition, both variants of the use of income account include, for households and for pension funds, an adjustment item for the change in pension and non-pension entitlements which relates to the way transactions between households and pension funds are recorded in the integrated framework of the SNA. This adjustment item, which is explained in chapter 10 on Use of income accounts, is not discussed here.

Table 3.6: The use of disposable income account

Expenditures		Revenues	
		B6	*Disposable income*
P3	Final consumption expenditure		
D8	Adjustment for the change in pension and non-pension entitlements	D8	Adjustment for the change in pension and non-pension entitlements
B8	*Saving*		

Table 3.7: The use of disposable income adjusted for social transfers in kind account

Expenditures		Revenues	
		B7	*Disposable income adjusted for social transfers in kind*
P4	Actual final consumption		
D8	Adjustment for the change in pension and non-pension entitlements	D8	Adjustment for the change in pension and non-pension entitlements
B8	*Saving*		

3.104 The difference between the revenues of the two variants of the use of income account depends on which balancing item is carried down from an earlier account. In terms of expenditures, the difference is between whether final consumption expenditure or actual final consumption is recorded. The former is recorded in the use of disposable income account; the latter in the use of disposable income adjusted for social transfers in kind account.

3.105 Final consumption expenditure covers transactions in final consumption of goods and services for which a sector is the ultimate bearer of the expense. Government, NPISHs and the central bank produce non-market goods and services in their production account, where intermediate consumption and remuneration of employees are recorded as expenditures. Final consumption expenditure of these producers relates to the value of their output of non-market goods and services, less their receipts from the sale of non-market goods and services at prices which are not economically significant, and possibly, less the sales of market goods and services which are produced as a secondary activity. However, it also covers goods and services that are purchased by government or NPISHs for ultimate transfer, without transformation, to households.

3.106 Actual final consumption of households covers goods and services which are effectively available for individual consumption by households, regardless of whether the ultimate bearer of the expense is government, NPISHs or households themselves. Actual final consumption of government and NPISHs is equal to consumption expenditure less social transfers in kind, or, in other words, collective consumption. The central bank also has collective consumption, but typically does not transfer individual goods and services at prices which are not economically significant to households.

3.107 At the level of total economy, disposable income and disposable income adjusted for social transfers in kind are equal, as are final consumption expenditure and actual final consumption. They differ only when considering the relevant sectors. For each sector, the difference between final consumption expenditure and actual final consumption is equal to social transfers in kind, provided or received. It is also equal to the difference between disposable income and disposable income adjusted for social transfers in kind. Thus the figures for saving are the same in both variants of the use of income account as income on the revenues side and consumption on the expenditures side differ by the same amount.

3.108 The balancing item of the use of income account, in its two variants, is saving. Saving ends the sequence of current accounts.

The accumulation accounts

3.109 Saving, being the balancing item of the last current account is the starting element of accumulation accounts.

3.110 A first group of accounts covers transactions which would correspond to all changes in assets or liabilities and net worth if saving and capital transfers were the only sources of changes in net worth. The accounts concerned are the capital account and the financial account. These two accounts are distinguished in order to show a balancing item which is useful for economic analysis, that is, net lending or net borrowing.

3.111 A second group of accounts relates to changes in assets, liabilities and net worth due to other factors. Examples are discoveries of mineral and energy resources, destruction by political events, such as war, or by natural disasters, such as forest fires, flooding, earthquakes and hurricanes. Such factors actually change the volume of assets, either physically or quantitatively. Other changes in assets and liabilities may also be linked with changes in the level and structure of prices. In the latter case, only the value of assets and liabilities is

modified, not their volume. Thus the second group of accumulation accounts is subdivided between an account for other changes in volume of assets and liabilities and an account for revaluations.

The capital account

3.112 The capital account (table 3.8) records transactions linked to acquisitions of non-financial assets and capital transfers involving the redistribution of wealth. The right-hand side includes (net) saving, and capital transfers receivable and capital transfers payable (with a minus sign) in order to arrive at that part of changes in net worth due to saving and capital transfers. The capital account includes among expenditures the various types of investment in non-financial assets. Because depreciation is a negative change in fixed assets, it is recorded, with a negative sign, on the left-hand side of the account. The same holds for the depletion of non-produced natural resources. Recording acquisitions, less disposals, of produced non-financial assets less depreciation on the same side is equivalent to recording net capital formation of produced non-financial assets.

Table 3.8: The capital account

Changes in assets		Changes in liabilities and net worth	
		B8	*Saving*
NF1	Acquisitions less disposals of produced non-financial assets (excluding natural resources)		
NF11	Gross fixed capital formation		
NF12	Depreciation (-)		
NF13	Changes in inventories		
NF14	Acquisitions less disposals of valuables		
NF2	Acquisitions less disposals of non-produced non-financial assets (excluding natural resources)		
NF3	Acquisitions less disposals of natural resources		
NF31	Gross fixed capital formation		
NF32	Depreciation (-)		
NF33	Changes in inventories		
NF34	Acquisitions less disposals of non-produced natural resources		
NF35	Depletion (-)		
		D9r	Capital transfers, receivable (+)
		D9p	Capital transfers, payable (-)
		B101	*Changes in net worth due to saving and capital transfers*
B9	*Net lending (+) / net borrowing (–)*		

3.113 The balancing item of the capital account is called net lending when positive and measuring the net amount a unit or a sector finally has available to finance, directly or indirectly, other units or sectors, or net borrowing when negative, corresponding to the amount a unit or a sector is obliged to borrow from others.

The financial account

3.114 The financial account (table 3.9) records transactions in financial instruments for each financial instrument. These transactions show net acquisition of financial assets on the left-hand side or net incurrence of liabilities

on the right-hand side.

Table 3.9: The financial account

Changes in assets		Changes in liabilities and net worth	
		B9	*Net lending (+) / net borrowing (–)*
	Net acquisition of financial assets		Net acquisition of liabilities
F1	Monetary gold and SDRs	F1	Monetary gold and SDRs
F2	Currency and deposits	F2	Currency and deposits
F3	Debt securities	F3	Debt securities
F4	Loans	F4	Loans
F5	Equity and investment fund shares / units	F5	Equity and investment fund shares / units
F6	Insurance, pension and standardized guarantee schemes	F6	Insurance, pension and standardized guarantee schemes
F7	Financial derivatives and employee stock options	F7	Financial derivatives and employee stock options
F8	Other accounts receivable/payable	F8	Other accounts receivable/payable

3.115 The balancing item of the financial account is again net lending or net borrowing, which appears this time on the right-hand side of the account. In principle, net lending or net borrowing is measured identically in both the capital and financial accounts. In practice, achieving this identity is one of the most difficult tasks in compiling national accounts.

The other changes in the volume of assets and liabilities account

3.116 The other changes in the volume of assets and liabilities account (table 3.10) records the effect of exceptional events that cause not only the value but also the volume of assets and liabilities to vary. In addition to the kind of events referred to above, such as the consequences of war or forest fires, flooding, earthquakes and hurricanes, this account also includes some adjustment elements such as changes in classification and structure which may or may not have an influence on net worth (see chapter 13 on Other changes in assets and liabilities accounts). The balancing item, changes in net worth due to other changes in the volume of assets and liabilities, is recorded on the right-hand side.

Table 3.10: The other changes in the volume of assets and liabilities account

Changes in assets		Changes in liabilities and net worth	
K1	Economic appearance of assets	K1	Economic appearance of assets
K2	Economic disappearance of assets	K2	Economic disappearance of assets
K3	Catastrophic losses	K3	Catastrophic losses
K4	Uncompensated seizures	K4	Uncompensated seizures
K5	Other changes in volume n.e.c.	K5	Other changes in volume n.e.c.
K6	Changes in classification	K6	Changes in classification
K61	Changes in sector classification and structure	K61	Changes in sector classification and structure
K62	Changes in classification of assets and liabilities	K62	Changes in classification of assets and liabilities
K1-K6	Total other changes in volume	K1-K6	Total other changes in volume
K1-K6 AN1	Produced non-financial assets (excluding natural resources)	K1-K6 AN1	Produced non-financial assets (excluding natural resources)
K1-K6 AN2	Non-produced non-financial assets (excluding natural resources)	K1-K6 AN2	Non-produced non-financial assets (excluding natural resources)
K1-K6 AN3	Natural resources	K1-K6 AN3	Natural resources
K1-K6 AF	Financial assets and liabilities	K1-K6 AF	Financial assets and liabilities
		B102	*Changes in net worth due to other changes in the volume of assets and liabilities*

The revaluation account

3.117 The revaluation account (table 3.11) records holding gains or losses. It starts with nominal holding gains and losses. This item records the full change in value of the various assets or liabilities due to the change in the prices of those assets and liabilities since the beginning of the accounting period or the time of entry into stock and the time of exit from stock or the end of the accounting period.

Table 3.11: The revaluation account

Changes in assets		Changes in liabilities and net worth	
	Nominal holding gains and losses		***Nominal holding gains and losses***
K7 AN	Non-financial assets	K7 AN	Non-financial assets
K7 AN1	Produced non-financial assets (excluding natural resources)	K7 AN1	Produced non-financial assets (excluding natural resources)
K7 AN2	Non-produced non-financial assets (excluding natural resources)	K7 AN2	Non-produced non-financial assets (excluding natural resources)
K7 AN3	Natural resources	K7 AN3	Natural resources
K7 AF	Financial assets and liabilities	K7 AF	Financial assets and liabilities
		B103	*Changes in net worth due to nominal holding gains/losses*
	Neutral holding gains and losses		***Neutral holding gains and losses***
K71 AN	Non-financial assets	K71 AN	Non-financial assets
K71 AN1	Produced non-financial assets (excluding natural resources)	K71 AN1	Produced non-financial assets (excluding natural resources)
K71 AN2	Non-produced non-financial assets (excluding natural resources)	K71 AN2	Non-produced non-financial assets (excluding natural resources)
K71 AN3	Natural resources	K71 AN3	Natural resources
K71 AF	Financial assets and liabilities	K71 AF	Financial assets and liabilities
		B1031	*Changes in net worth due to neutral holding gains/losses*
	Real holding gains and losses		***Real holding gains and losses***
K72 AN	Non-financial assets	K72 AN	Non-financial assets
K72 AN1	Produced non-financial assets (excluding natural resources)	K72 AN1	Produced non-financial assets (excluding natural resources)
K72 AN2	Non-produced non-financial assets (excluding natural resources)	K72 AN2	Non-produced non-financial assets (excluding natural resources)
K72 AN3	Natural resources	K72 AN3	Natural resources
K72 AF	Financial assets and liabilities	K72 AF	Financial assets and liabilities
		B1032	*Changes in net worth due to real holding gains/losses*

3.118 Just as transactions and other flows in assets appear on the left-hand side of the account and transactions and other flows in liabilities on the right-hand side, so nominal holding gains or losses on assets appear on the left-hand side of the revaluation account, while nominal holding gains and losses on financial liabilities are recorded on the right-hand side. A positive revaluation of financial liabilities is equivalent to a nominal holding loss; a negative revaluation of liabilities is equivalent to a nominal holding gain.

3.119 The balancing item of the revaluation account is changes in net worth due to nominal holding gains and losses.

3.120 Nominal holding gains and losses are subdivided between two components. The first shows the revaluation in proportion to the general price level which is obtained by applying, during the same periods of time, an index of the change in general price level to the initial value of all assets or liabilities, even to those that are fixed in monetary terms. The results of this operation are called neutral holding gains and losses because all assets and liabilities are revalued so as to preserve exactly their purchasing power.

3.121 The second component of holding gains and losses shows the difference between nominal holding gains and losses and neutral holding gains and losses. This difference is called real holding gains and losses. If the nominal holding gains and losses are higher than the neutral holding gains and losses, there is a real holding gain, due to the fact that on average the actual prices of the assets in question have increased more (or

decreased less) than the general price level. In other words, the relative prices of its assets have increased. Similarly, a decrease in relative prices of assets leads to a real holding loss.

3.122 Each of the three types of holding gains or losses are subdivided according to the main groups of assets and liabilities, a decomposition which is necessary even in a simplified accounting presentation. Changes in net worth due to nominal holding gains and losses can be subdivided into changes due to neutral holding gains and losses and changes due to real holding gains and losses.

Balance sheets

3.123 The opening and closing balance sheets (table 3.12), display assets on the left-hand side, and liabilities and net worth on the right-hand side. Assets and liabilities, as previously explained, are valued at the prices of the date a balance sheet is established.

Table 3.12: The opening balance sheet, changes in assets and liabilities and closing balance sheet

Stocks and changes in assets		Stocks and changes in liabilities	
	Opening balance sheet		***Opening balance sheet***
AN	Non-financial assets	*AN*	Non-financial assets
AN1	Produced non-financial assets (excluding natural resources)	*AN1*	Produced non-financial assets (excluding natural resources)
AN2	Non-produced non-financial assets (excluding natural resources)	*AN2*	Non-produced non-financial assets (excluding natural resources)
AN3	Natural resources	*AN3*	Natural resources
AF	Financial assets/liabilities	*AF*	Financial assets/liabilities
		B90	*Net worth*
	Total changes in assets and liabilities		***Total changes in assets and liabilities***
AN	Non-financial assets	*AN*	Non-financial assets
AN1	Produced non-financial assets (excluding natural resources)	*AN1*	Produced non-financial assets (excluding natural resources)
AN2	Non-produced non-financial assets (excluding natural resources)	*AN2*	Non-produced non-financial assets (excluding natural resources)
AN3	Natural resources	*AN3*	Natural resources
AF	Financial assets/liabilities	*AF*	Financial assets/liabilities
		B10	*Changes in net worth, total*
		B101	*Saving and capital transfers*
		B102	*Other changes in volume of assets*
		B103	*Nominal holding gains/losses*
	Closing balance sheet		***Closing balance sheet***
AN	Non-financial assets	*AN*	Non-financial assets
AN1	Produced non-financial assets (excluding natural resources)	*AN1*	Produced non-financial assets (excluding natural resources)
AN2	Non-produced non-financial assets (excluding natural resources)	*AN2*	Non-produced non-financial assets (excluding natural resources)
AN3	Natural resources	*AN3*	Natural resources
AF	Financial assets/liabilities	*AF*	Financial assets/liabilities
		B90	*Net worth*

3.124 The balancing item of a balance sheet is net worth, the difference between assets and liabilities. Net worth is equivalent to the current value of the stocks, less liabilities, a unit or a sector holds.

3.125 The changes in the balance sheet recapitulate the content of the accumulation accounts, that is, the entry for each asset or liability is the sum of the entries in the four accumulation accounts corresponding to that asset or liability. The changes in net worth can be calculated from these entries but must by definition be equal to the changes in net worth due to saving and capital transfers from the capital account plus changes in net worth due to other changes in the volume of assets and liabilities from the other changes in the volume of assets and liabilities account plus nominal holding gains and losses from the revaluation account.

3.126 Conceptually, the entries for the closing balance sheet are equal, asset by asset and liability by liability to the entries in the opening balance sheet plus the changes recorded in the four accumulation accounts.

3. An integrated presentation of the sequence of economic accounts

3.127 It is now possible to put together the various elements which have been introduced in the previous subsections and to present in detail the integrated sequence of economic accounts. Table 3.13 gives a simplified version of the integrated current accounts. It is formed by taking each of tables 3.1, 3.2, 3.3, 3.4 and 3.6 and placing them immediately one under the other. In this presentation the transactions and other flows are shown in the middle of the table with columns to the left for the expenditures and columns to the right for revenues. In a full presentation of this type there would be one column for each sector or subsector of interest. In the interest of introducing the table in a simple manner, only four columns are shown in table 3.13. The first of these represents the sum of all the five sectors of the total economy (non-financial corporations, financial corporations, general government, NPISHs and households). There follows a column for the rest of the world, then one headed goods and services and the last is a column representing the sum of the previous three. This column has little economic meaning but is a critical way of ensuring that the tables are complete and consistent since the totals on the left-hand side and right-hand side of the accounts must be equal line by line. (When balancing items are shown as the last item in one account and the first in the next account, this equality is misaligned but still obvious.)

3.128 Table 3.14 shows the continuation of the integrated sequence of economic accounts, including the accumulation accounts and balance sheets as previously presented in tables 3.8, 3.9, 3.10, 3.11 and 3.12. Here the columns to the left represent assets or changes in assets and columns to the right liabilities or changes in liabilities and net worth or changes in net worth. Together tables 3.13 and 3.14 make up the integrated sequence of economic accounts. The data in the two tables are drawn from the numerical example that runs through the entire publication. The tables for each account in chapters 7 to 14 are expanded versions of the tables shown here with columns for all institutional sectors and a full set of transactions and other flows for each of these accounts. A composite version of the tables, with all the details just mentioned, appears in Annex 2.

3.129 The integrated sequence of economic accounts give a complete picture of the accounts of the total economy including balance sheets, in a way that permits the principal economic relations and the main aggregates to be shown. This table shows, simultaneously, the general accounting structure of the sequence of economic accounts and presents a set of data for the institutional sectors, the economy as a whole and the rest of the world.

3.130 The presentation of the integrated sequence of economic accounts in this form is one of several ways in which a bird's eye view of the accounts can be obtained. Another way is by means of a diagram such as figure 3.1, which gives the same information in schematic form.

The integrated sequence of economic accounts provide an overview of the economy as a whole. As already indicated, the integrated presentation contains much more detail than has actually been included in the tables and may be used to give a more detailed view if so desired. Columns might be introduced for subsectors. The rest of the world column can be subdivided according to various geographical zones. The column for goods and services may show market goods and services separately. The classification of transactions in the rows might be used at more detailed levels, and so on. However, including more detail directly in this scheme at the same time would result in a very complicated and unmanageable table. For this reason, more detailed analysis of production and transactions in goods and services, transactions in financial instruments, detailed balance sheets, as well as analysis by purpose are done in other frameworks. These are presented in the next section and their links with the sequence of economic accounts are also explained.

Table 3.13: The integrated presentation of the full sequence of the current accounts

Expenditures									Revenues
Total economy	Rest of the world	Goods and services	Total	Code	Transactions and balancing items	Total economy	Rest of the world	Goods and services	Total
		499	499	P7	Imports of goods and services		499		499
		392	392	P71	Imports of goods		392		392
		107	107	P72	Imports of services		107		107
	540		540	P6	Exports of goods and services			540	540
	462		462	P61	Exports of goods			462	462
	78		78	P62	Exports of services			78	78
					Production account				
		3 617	3 617	P1	Output	3 617			3 617
		3 075	3 075	P11	Market output	3 075			3 075
		147	147	P12	Output for own final use	147			147
		395	395	P13	Non-market output	395			395
1 881			1 881	P2	Intermediate consumption			1 881	1 881
		141	141	D21	Taxes on products	141			141
		- 8	- 8	D31	Subsidies on products (-)	- 8			- 8
1 869			1 869	B1g	Value added, gross / Gross domestic product				
222			222	P51d	Depreciation				
30			30	P8	Depletion				
1 617			1 617	B1n	*Value added, net / Net domestic product*				
	- 41		- 41	B11	*External balance of international trade in goods and services*				
					Generation of earned income account				
				B1g	Value added, gross / Gross domestic product	1 869			1 869
				B1n	*Value added, net / Net domestic product*	1 617			1 617
1 150			1 150	D1	Remuneration of employees				
235			235	D2	Taxes on production and imports				
141			141	D21	Taxes on products				
94			94	D29	Other taxes on production				
- 44			- 44	D3	Subsidies				
- 8			- 8	D31	Subsidies on products				
- 36			- 36	D39	Other subsidies on production				
467			467	B2g	Operating surplus, gross				
61			61	B3g	Mixed income, gross				
214			214	P51d1	Depreciation on gross operating surplus				
8			8	P51d2	Depreciation on gross mixed income				
30			30	P81	Depletion on gross operating surplus				
0			0	P82	Depletion on gross mixed income				
223			223	B2n	*Operating surplus, net*				
53			53	B3n	*Mixed income, net*				
					Allocation of earned income account				
				B2g	Operating surplus, gross	467			467
				B3g	Mixed income, gross	61			61
				B2n	*Operating surplus, net*	223			223
				B3n	*Mixed income, net*	53			53
	6		6	D1	Remuneration of employees	1 154	2		1 156
			0	D2	Taxes on production and imports	235			235
			0	D3	Subsidies	- 44			- 44
391	44		435	D4	Property income	397	38		435
- 18			- 18	D42dep (-)	Depletion borne by the legal owner	- 18			- 18
1 879			1 879	B5g	Balance of earned incomes, gross / National income, gross				
1 627			1 627	B5n	Balance of earned income, net / National income, net				
					Income transfers other than transfers in kind account				
				B5g	Balance of earned incomes, gross / National income, gross	1 879			1 879
				B5n	*Balance of earned income, net / National income, net*	1 627			1 627
1 212	17		1 229		Current transfers	1 174	55		1 229
212	1		213	D5	Current taxes on income, wealth, etc.	213	0		213
333	0		333	D61	Social contributions less service charges	333	0		333
384	0		384	D62	Social benefits other than social transfers in kind	384	0		384
283	16		299	D7	Other current transfers	244	55		299
1 841			1 841		Disposable income, gross				
1 589			1 589		*Disposable income, net*				
					Use of disposable income account				
				B6g	Disposable income, gross	1 841			1 841
				B6n	*Disposable income, net*	1 589			1 589
1 414			1 414	P3	Final consumption expenditure			1 414	1 414
11	0		11	D8	Adjustment for the change in pension and non-pension entitlements	11	0		11
427			427	B8g	Saving, gross				
175			175	B8n	*Saving, net*				
	- 13		- 13	B12	*Current external balance*				

Table 3.14: The integrated presentation of the full sequence of the accumulation accounts and balance sheets

Change in assets						Changes in liabilities and net worth			
Total economy	Rest of the world	Goods and services	Total	Code	Transactions and balancing items	Total economy	Rest of the world	Goods and services	Total
					Capital account				
				B8n	*Saving, net*	175			175
				B12	*Current external balance*		- 13		- 13
180			180	NF1	Acquisitions less disposals of produced non-financial assets (excluding natural resources)				
349			349	NF11	Gross fixed capital formation			349	349
- 204			- 204	NF12	Depreciation (-)				
25			25	NF13	Changes in inventories			25	25
10			10	NF14	Acquisitions less disposals of valuables			10	10
0	0		0	NF2	Acquisitions less disposals of non-produced non-financial assets (excluding natural resources)				
- 18			- 18	NF3	Acquisitions less disposals of natural resources				
27			27	NF31	Gross fixed capital formation			27	27
- 18			- 18	NF32	Depreciation (-)				
3			3	NF33	Changes in inventories			3	3
0			0	NF34	Acquisitions less disposals of non-produced natural resources				
- 30			- 30	NF35	Depletion (-)				
				D9r	Capital transfers, receivable	62	4		66
				D9p	Capital transfers, payable	- 65	- 1		- 66
				B101	Changes in net worth due to saving and capital transfers	172	- 10		162
10	- 10		0		*Net lending (+) / net borrowing (–)*				
					Financial account				
				B9	*Net lending (+) / net borrowing (–)*	10	- 10		0
437	48		485		Net acquisition of liabilities	427	58		485
- 1	1		0	F1	Monetary gold and SDRs	0	0		0
90	11		101	F2	Currency and deposits	102	- 1		101
86	10		96	F3	Debt securities	75	21		96
78	4		82	F4	Loans	47	35		82
107	12		119	F5	Equity and investment fund shares / units	105	14		119
48	0		48	F6	Insurance, pension and standardized guarantee schemes	48	0		48
14	0		14	F7	Financial derivatives and employee stock options	11	3		14
15	10		25	F8	Other accounts receivable/payable	39	- 14		25
					Other changes in the volume of assets and liabilities account				
18			18		Total other changes in volume	3			3
- 7			- 7	K1-K6 AN1	Produced non-financial assets (excluding natural resources)				0
- 1			- 1	K1-K6 AN2	Non-produced non-financial assets (excluding natural resources)				0
23			23	K1-K6 AN3	Natural resources				0
3			3	K1-K6 AF	Financial assets and liabilities	3			3
				B102	Changes in net worth due to other changes in the volume of assets and liabilities	15			15
					Revaluation account				
					Nominal holding gains and losses				
280			280	K7 AN	Non-financial assets	0			0
84	7		91	K7 AF	Financial assets and liabilities	76	15		91
				B103	*Changes in net worth due to nominal holding gains/losses*	288	- 8		280
					Neutral holding gains and losses				
198			198	K71 AN	Non-financial assets	0			0
136	12		148	K71 AF	Financial assets and liabilities	126	22		148
				B1031	*Changes in net worth due to neutral holding gains/losses*	208	- 10		198
					Real holding gains and losses				
82			82	K72 AN	Non-financial assets	0			0
- 52	- 5		- 57	K72 AF	Financial assets and liabilities	- 50	- 7		- 57
				B1032	*Changes in net worth due to real holding gains/losses*	80	2		82
					Stocks and changes in assets				
					Opening balance sheet				
4 924			4 924	AN	Non-financial assets				
8 231	805		9 036	AF	Financial assets/liabilities	7 762	1 274		9 036
				B90	*Net worth*	5 393	- 469		4 924
					Total changes in assets and liabilities				
457			457	AN	Non-financial assets				
524	55		579	AF	Financial assets/liabilities	506	73		579
				B10	*Changes in net worth, total*	475	- 18		457
				B101	*Saving and capital transfers*	172	- 10		162
				B102	*Other changes in volume of assets*	15	0		15
				B103	*Nominal holding gains/losses*	288	- 8		280
				B1031	Neutral holding gains/losses	208	- 10		198
				B1032	Real holding gains/losses	80	2		82
					Closing balance sheet				
5 381			5 381	AN	Non-financial assets				
8 755	860		9 615	AF	Financial assets/liabilities	8 268	1 347		9 615
				B90	*Net worth*	5 868	- 487		5 381

Figure 3.1: Diagram of the sequence of economic accounts for the total economy

The rest of the world accounts

3.131 The rest of the world account covers transactions between resident and non-resident institutional units and the related stocks of assets and liabilities where relevant.

3.132 As the rest of the world plays a role in the accounting structure similar to that of an institutional sector, the rest of the world account is established from the point of view of the rest of the world. A revenue for the rest of the world is an expenditure for the total economy and vice versa. If a balancing item is positive, it means a surplus of the rest of the world and a deficit of the total economy, and vice versa if the balancing item is negative.

3.133 The external account of goods and services is shown at the same level as the production account for institutional sectors. Imports of goods and services (499) are a revenue for the rest of the world, exports (540) are an expenditure. The external balance of goods and services is (-41). With a positive sign, it is a surplus of the rest of the world (a deficit of the nation) and vice versa. To this are added or deducted the various kinds of taxes, remuneration of employees and other current transfers payable to, and receivable from, the rest of the world. The current external balance is -13, indicating a deficit for the rest of the world but a surplus for the total economy. Again, if it had a positive sign, it would be a surplus of the rest of the world (a deficit of the total economy).

The goods and services account

3.134 As noted above, the integrated presentation of the sequence of economic accounts includes a column on each side labelled goods and services. Entries in these columns reflect the various transactions in goods and services that appear in the accounts of the institutional sectors. Expenditures of goods and services in the institutional sector accounts are reflected on the right-hand column for goods and services; revenues of goods and services in the institutional sector accounts are reflected on the left-hand column for goods and services. On the revenues side of the table, the figures appearing in the column for goods and services are the counterparts of the expenditures made by the various sectors and the rest of the world: exports (540), intermediate consumption (1 881), final consumption (1 414), gross fixed capital formation (376), changes in inventories (28) and acquisitions less disposals of valuables (10). On the expenditure side of the table, the figures in the column for goods and services are the counterparts of the revenues of the various sectors and the rest of the world: imports (499) and output (3 617). Taxes on products (less subsidies) are also included on the revenue side of the accounts. The coverage of this item varies according to the way output is valued (see the discussion on valuation in section C). The part (possibly the total) of taxes, less subsidies, on products, that is not included in the value of output does not originate in any specific sector or industry; it is a revenue of the total economy. In the numerical example taxes, less subsidies, on products (133) are shown directly in the column for goods and services. They are a component of the value of the supply of goods and services which has no counterpart in the value of the output of any institutional sector.

3.135 The goods and services account is a particularly important account as it forms the basis of the most familiar definition of GDP. Table 3.15 shows the account in the same format as earlier tables in the chapter (though with numeric values included).

Table 3.15: The goods and services account

Expenditures			Revenues		
Code			**Code**		
P2	Intermediate consumption	1 881	P1	Output	3 617
P3	Final consumption expenditure	1 414	P7	Imports of goods and services	499
	Gross capital formation	414	D21	Taxes on products	141
NF11	Gross fixed capital formation	376	D31	Subsidies on products (-)	- 8
NF13	Changes in inventories	28			
NF14	Acquisitions less disposals of valuables	10			
P6	Exports of goods and services	540			
Total expenditures		4 249	*Total revenues*		4 249

The aggregates

3.136 The aggregates of the integrated framework of the SNA, such as value added, income, consumption and saving, are composite values which measure one aspect of the activity of the entire economy. They are summary indicators and key magnitudes for purposes of macroeconomic analysis and comparisons over time and space. The SNA aims to provide a simplified but complete and detailed picture of complex economies, so the calculation of the aggregates is neither the sole nor the main purpose of national accounting; nevertheless summary figures are very important.

3.137 Some aggregates may be obtained directly as totals of particular transactions in the integrated framework of national accounts; examples are final consumption, acquisitions, less disposals, of produced non-financial assets, and social contributions. Others may result from aggregating balancing items for the institutional sectors; examples are value added, balance of earned incomes, disposable income and saving. They may need some further elaboration. However, some of them are so commonly used that they deserve additional explanation at this early stage.

3.138 An overview of the aggregates in the integrated framework of the SNA and the accounts in which they appear is given in figure 3.2.

Figure 3.2: Summary of the main economic accounts, balancing items and main aggregates

Account	Balancing item	Main aggregates
Current accounts		
Production account		
Production account	Value added	Domestic product (GDP, NDP)
Earned income accounts		
Generation of earned income account	Operating surplus/ mixed income	
Allocation of earned income account	Balance of earned income	National income (GNI, NNI)
Entrepreneurial income account	Entrepreneurial income	
Allocation of other earned income account	Balance of earned income	
Income transfers other than transfers in kind account	Disposable income	National disposable income
Social transfers in kind account	Disposable income adjusted for social transfers	
Use of income accounts		
Use of disposable income account	Saving	
Use of disposable income adjusted for social transfers in kind account	Saving	National saving
Accumulation accounts		
Capital account	Net borrowing (+)/ net lending (-)	
Financial account	Net borrowing (+)/ net lending (-)	
Other changes in assets accounts		
Other changes in the volume of assets and liabilities account		
Revaluation account		
Balance sheets		
Opening balance sheet	Net worth	National wealth
Changes in assets and liabilities	Changes in net worth	
Closing balance sheet	Net worth	National wealth
Contributions to change in net worth		
Capital account	*Change in net worth due to saving and capital transfers*	
Other changes in the volume of assets and liabilities account	*Change in net worth due to other changes in the volume of assets*	
Revaluation account	*Changes in net worth due to nominal holding gains and losses*	

Gross domestic product (GDP)

3.139 Basically, GDP derives from the concept of value added. Gross value added is the difference between output and intermediate consumption. GDP is the sum of gross value added of all resident producer units plus that part (possibly the total) of taxes, less subsidies, on products, that is not included in the valuation of output.

3.140 Next, GDP is also equal to the sum of the final uses of goods and services (all uses except intermediate

consumption) measured at purchasers' prices, less the value of imports of goods and services.

3.141 Finally, GDP is also equal to the sum of earned incomes distributed by resident producer units.

Net domestic product (NDP)

3.142 In principle, the concept of value added should exclude allowances for depreciation and depletion. Depreciation, in effect, is not newly created value, but a reduction in the value of previously created fixed assets when they are used up in the production process. Depletion is also treated as a cost of production, as it represents the decline in the value of natural resources due to their extraction in the production of goods. Thus, theoretically, value added is a net concept. This conclusion applies to domestic product as well; theoretically, domestic product should be a net concept. Net domestic product (NDP) is obtained by deducting depreciation and depletion from GDP.

3.143 However, gross measures of product and income are commonly used for various reasons. The depreciation of fixed assets as calculated in business accounting does not generally meet the requirements of the SNA. The calculation of depreciation requires that statisticians estimate the present value of the stock of the relevant assets, the lifetime of various types of assets, patterns of depreciation, etc. Not all countries make such calculations, and when they do there may be differences in methodology (with some of them using business data even when inadequate). There may be similar concerns when it comes to the estimation of depletion. Consequently, gross figures are more often available, or available earlier, and they are generally considered more comparable between countries, although significant efforts are being made to further improve estimates of depreciation and depletion, including their comparability across countries. All in all, GDP is typically used even if it is, on a conceptual basis, economically inferior to NDP. However, NDP should also be calculated, with improved estimates of depreciation and depletion when necessary, in order to provide a significant tool for various types of analysis.

Gross national income (GNI)

3.144 Earned incomes generated in the production activity of resident producer units are distributed mostly to other resident institutional units; however, part of them may go to non-resident units. Symmetrically, some earned incomes generated in the rest of the world may go to resident units. This leads to the definition and measurement of gross national income (GNI). GNI is equal to GDP less earned incomes payable to non-resident units plus earned incomes receivable from non-resident units. In other words, GNI is equal to GDP less taxes, less subsidies, on production and imports, remuneration of employees and property income payable to the rest of the world plus the corresponding items receivable from the rest of the world. Thus GNI is the sum of gross earned incomes receivable by resident institutional units or sectors. In contrast to GDP, GNI is not a concept of value added, but a concept of income.

3.145 By deducting depreciation and depletion from GNI, net national income (NNI) is obtained. The remarks above about the conceptual relevance of the net concept in case of product apply even more strongly to national income.

National disposable income

3.146 Earned incomes receivable by resident institutional units may be used in part to make current transfers to non-resident units and resident units may receive similar transfers originating out of earned incomes in the rest of the world. Gross national disposable income is equal to GNI less current transfers (other than taxes, less subsidies, on production and imports) payable to non-resident units, plus the corresponding transfers receivable by resident units from the rest of the world. Gross national disposable income measures the income available to the total economy for final consumption and gross saving. By deducting depreciation and depletion from gross national disposal income, net national disposable income is obtained. National disposable income is the sum of disposable income of all resident institutional units or sectors.

Accounts in volume terms

3.147 All the aggregates referred to above are calculated in current values. The influence of changes in prices may also be eliminated. Domestic product is calculated in volume terms in order to measure the real change that occurs from one period to another. This is possible because output, intermediate consumption and taxes, less subsidies, on products can all be calculated in volume terms. On the other hand, aggregates of income may not be expressed in volume terms because income flows may not, strictly speaking, be broken down into a quantity and a price component. They may, however, be calculated at constant purchasing power, which is described as being in real terms. When moving from domestic product in volume terms to national income in real terms, the effect of changes in the terms of trade between the total economy and the rest of the world must be taken into account. The necessary adjustment is described in chapter 18 on Measuring prices, volumes and productivity.

Aggregates per head of population

3.148 A dimension is added to the usefulness of a number of national accounts aggregates by calculating these figures per head. For broad aggregates such as GDP, NDP, GNI, NNI or household final consumption, the denominator commonly used is the total (resident) population. When sub-sectoring the accounts or part of the accounts of the household sector, data on the number of households and the number of persons in each subsector are also necessary.

4. The other parts of the integrated framework

Supply and use tables

3.149 The detailed analysis of production by industries and flows of goods and services by kind of products is an integral part of the integrated framework of national accounts. It would be feasible to include further details in the sequence of economic accounts table; for example, the rows for output, intermediate consumption and value added might be subdivided by kind of economic activity; the columns for goods and services might be subdivided by type of products. However, the integrated framework of the SNA does not adopt this solution, because the table would become cumbersome. Instead, tables that provide a systematic cross-classification by institutional sectors and industries of output, intermediate consumption, and value added and its components are proposed. They are described in detail in chapter 15 on Supply and use tables and chapter 36 on Input-output tables but the main features are outlined here.

3.150 The production and generation of earned income accounts in the sequence of economic accounts are given only by institutional sectors and with a global balance of transactions on goods and services. The detailed analysis of production activities and product balances is made in the supply and use tables presenting:

- The revenues and expenditures of goods and services for each type of product;
- The production and generation of earned income accounts for each industry according to kind of economic activity;
- Data on factors of production (labour and capital) used by industries.

Labour market tables

3.151 In productivity studies, data on the labour inputs used by each industry in the process of production are indispensable. For this purpose, total hours worked is the preferred measure of labour inputs. Labour inputs can also be measured in terms of the number of jobs or the number of persons employed. These measures are also highly relevant in their own right, and very useful for analysing trends and short-term developments in the labour market. The labour market tables, which are also part of the integrated framework of national accounts, provide a systematic overview of the various measures of labour, including remuneration, consistent with the integrated framework of the SNA. The tables also provide the opportunity to include various breakdowns of labour input by, for example, age, sex of gender, and level of education.

3.152 Data on labour inputs may be derived from various data sources, the most important being labour force surveys, data from enterprise surveys, as well as administrative data. These source data must generally be adjusted in order to be consistent with the concepts, definitions and classifications of the integrated framework of national accounts, and after adjustment they need to be balanced in order to arrive at a consistent set of data on (remuneration of) labour. The resulting labour market tables are an integral part of the integrated framework of national accounts and are further explained in chapter 16 on Labour.

Tables on capital services

3.153 The contribution of labour input to production is recognized in remuneration of employees. The various elements of services provided by non-financial assets are not explicitly recognized in the sequence of economic account; they are an implicit part of operating surplus, or mixed income. Tables on capital services display the implicit services provided by non-financial assets: depreciation, depletion, and net return to capital used in production. By also associating estimates of capital services with the standard breakdown of value added, the contributions of both labour and capital to production can be portrayed in a form ready for use in the analysis of productivity in a way entirely consistent with the integrated framework of national accounts. More details on these tables, which are also considered as an integral part of the integrated framework, are provided in chapter 17 on Capital services.

Functional analysis

3.154 As explained in section B, the description of a transaction explains what type of flow is being recorded but it does not explain why the transaction is being entered into. In order to analyse the purpose of transactions, it is necessary to apply a functional classification to the basic transaction. For example, instead of disaggregating household consumption by type of product, it may be disaggregated to show how much is spent on food, housing, health, recreation and so on. For government consumption a distinction may be made between consumption related to law and order, defence, health or education, for instance. As compatible but different classifications are used according to the sector concerned, these partial analyses by purpose cannot be integrated in a single table and, in most cases, no exhaustive total for the total economy can be calculated in the sequence of economic accounts.

E. Cross-cutting issues

3.155 There are a range of issues impacting the economy that cut-across the various accounts and tables in the integrated framework of national accounts. Part IV of these standards contains six chapters which provide further details on digitalization, globalization, insurance and pensions, selected issues on financial instruments, Islamic finance, and contracts, leases, licenses and permits.

3.156 A wide variety of digital products and activities have appeared as part of digitalisation and digital assets have assumed important roles as stores of wealth or inputs in production. The profound impact of digitalisation on production, consumption, investment, prices, finance, and other aspects of the economy, as well as its impact on international trade in services and other cross-border transactions, calls for additional guidance. Chapter 22 on Digitalisation provides more detailed guidance on measuring the activities, products, and assets associated with digitalisation in and beyond the integrated framework of the SNA. It also provides methods to enhance the visibility of digital activity and products in the macroeconomic accounts.

3.157 Globalisation refers to the economic integration of economies around the world. Reduced trade barriers and advancements in communication, transportation, and technology have facilitated a rise in the cross-border movements of goods, services, capital, information, and people in recent decades. Those factors have also contributed to increasingly complex corporate structures that span across multiple economies. Such multinational enterprise (MNE) groups can be set up for many reasons, including to reduce labour costs, transportation costs, taxes, and proximity to markets. In addition, other global manufacturing and distribution arrangements, such as factory-less goods production and merchanting, have added to the complexities of interrelations between economies. These globalisation developments pose challenges to traditional

macroeconomic statistics, which are based on the concepts of residence and economic presence. Chapter 23 on Globalisation elaborates on issues related to globalisation that are touched upon throughout the integrated framework of the SNA. It focuses on the conceptual, measurement, and analytical challenges that arise from deeper corporate linkages and the fragmentation of production processes across economies, which motivate additional breakdowns and supplementary presentations, to arrive at a better understanding of the connections between economies.

3.158 One of the more complex areas in the measurement of economic activities within the integrated framework of the SNA concerns insurance: individual (non-life and life) insurance as well as social insurance, including the delineation between the two of them. Chapter 24 on Insurance and pensions provides a further elaboration of the guidance provided in chapters 7, 9, and 12 to 14. It also recommends a supplementary table on social insurance pension schemes to arrive at a better understanding of the differences in institutional arrangements across countries and its profound impact on the international comparison of the relevant data that are presented in the sequence of economic accounts.

3.159 Chapter 25 on Selected issues in financial instruments provides additional details on specific financial instruments, as a supplement to chapters 12 to 14. It specifically deals with the treatment of guarantees, financial derivatives and employee stock options. The chapter also touches on issues related to the recording of flows associated with financial assets and liabilities in the sequence of economic accounts.

3.160 Chapter 26 covers Islamic finance. Islamic finance is distinguishable from traditional finance in several ways, in relation to both financing and insurance activities. Islamic financial institutions as well as financial institutions with Islamic windows that offer both conventional finance and Islamic finance are bound by Shari'ah principles. The chapter provides further details on how to treat the arrangements within Islamic finance in the context of the integrated framework of the SNA.

3.161 Chapter 27 on Contracts, leases, licenses and permits brings together more detailed guidance on the treatment of the various types of contracts, leases, licenses and permits. The terms of the agreement for such arrangements may affect the time of recording of transactions made under the agreement as well as the classification of payments and the ownership of the item subject to the agreement.

F. Institutional units and sectors in more detail

3.162 Part V of these standards, comprising of chapter 28 to 33, includes further details on some of the particularities of the main institutional sectors included in the sequence of economic accounts: non-financial corporations (chapter 28), financial corporations (chapter 29), general government and the public sector (chapter 30), households (chapter 31), non-profit institutions (chapter 32) and transactions and positions between residents and non-residents (chapter 33).

3.163 In relevant cases, information is also provided on the links with other macro-economic standards, such as the *MFSMCG* in the chapter on financial corporations, and the *GFSM* in the chapter on general government and the public sector, and the *BPM* in the chapter on transactions and positions between residents and non-residents. The relationship with business accounting standards and public sector accounting standards are also concisely addressed in chapter 28 on Non-financial corporations and chapter 30 on General government and the public sector, respectively.

G. The integrated framework and flexibility

1. Applying the integrated framework in a flexible way

3.164 The integrated framework of the SNA is consistent in terms of its concepts and its accounting structure. Links between the various elements of the integrated framework have been illustrated in order to depict its structure in a simple but complete way. That presentation does not imply any order of priority or frequency (quarterly, annually, etc.) for implementing national accounts. Priorities in compiling national accounts are a matter of statistical policy; no universal recommendation can be made. (Some indications relevant to specific circumstances are provided in relevant handbooks.) Similarly, the accounting structure does not imply that results always have to be presented exactly as they stand in this or other chapters. A country may choose to

publish mainly time series, to prepare only some accounts or aggregates, etc.

3.165 In general, the SNA has to be looked at in a consistent but flexible way. According to analytical requirements and data availability, the attention paid to various aspects of the integrated framework may vary. In general, greater emphasis may be given to one part rather than another by choosing the level of disaggregation to adopt for classifications of institutional sectors, industries, products, transactions, sequence of economic accounts, etc., by using different methods of valuation; by using different priorities for various parts of the accounts and different frequencies; by rearranging the results; by introducing some additional elements, etc.

3.166 The household sector provides a good illustration of what may be done in order to provide an in-depth analysis of the household conditions and the functioning of the economy as a whole. A detailed approach to the household sector may be undertaken, first of all, by deconsolidating the household sector beyond the subsectors included in the main classification of the SNA, distinguishing, for instance, the type of economic activity carried out (formal or informal), the location of the household (urban or rural) or the level of skill. Secondly, it is possible to adapt the way household activities are portrayed in the sequence of economic accounts. For instance, a concept of discretionary income may be used by excluding from disposable income those elements which are provided in kind and for which the household has no choice on how to spend this part of income, or the classification of household transactions may be complemented, to show the industry of origin of various types of income, and so on.

3.167 The flexibility of the SNA is further illustrated with the public sector, whose components are systematically shown at various levels of detail in the classification of institutional sectors. The components of the public sector consist of general government units and public corporations, and may be rearranged to group the accounts of the overall public sector. These accounts may be shown before consolidation and after consolidation to describe the relations between the public sector and the private sector and between the public sector and the rest of the world (by separating out the external transactions of the public sector).

3.168 Part VI (chapters 34-38 provide more detailed analyses of the above examples, especially related to supporting the monitoring and the analysis of well-being and sustainability (see chapters 34 and 35). Chapters 36 and 37 provide examples of tables in matrix form, while chapter 38 discusses thematic and extended accounts. Part VI also includes more details on the informal economy, in chapter 39. The remainder of this section provides a short introduction to matrix-type of tables as well as a concise overview of thematic and extended accounts and tables.

2. Introducing tables in matrix form

Input-output tables

3.169 As noted in the above, supply and use tables are an integral part of the integrated framework of the SNA and the process of compiling these tables is a powerful way of ensuring consistency between the various data sources available to the compiler. For many analytical purposes, though, a transformation from a pair of supply and use tables into a single input-output table where row and column totals are equal brings very considerable advantages. Input-output tables cannot be compiled without passing through the supply and use stage (except under very restrictive assumptions). They are therefore analytical constructs that inevitably involve some degree of modelling in their compilation.

3.170 There is a vast literature on the compilation and use of input-output tables and it is impossible to give a full appreciation of the range of complexities of compilation and inventiveness of applications. Chapter 36 aims to give a feel for the sort of operations necessary to transform supply and use tables into input-output tables and to give some ideas of their possible applications. The chapter also discusses the compilation of multi-country input-output tables, and their use, for example to disentangle gross flows of imports and exports related to global production arrangements, thus arriving at trade in value added, as described in chapter 23 on Globalisation.

From-whom-to-whom tables

3.171 The integrated sequence of economic accounts show which sectors acquire which financial assets and incur

which liabilities. In order to examine the working of the financial sector, the first expansion of the financial account is to distinguish nine subsectors within financial corporations and eight categories of financial assets and liabilities. The subsectors of financial institutions are discussed in chapter 5 on Institutional units and sectors, economic territory and residence and the details of the financial instruments are described in chapter 12 on Financial account.

3.172 However, as explained in the introduction to this chapter, the presentation of the financial account as described in this chapter even with the elaboration of subsectors and financial instruments described in chapters 5 and 12, is still not fully articulated. It shows which sectors and subsectors incur loans and make deposits but it does not allow an in-depth examination of the intermediation process whereby a financial institution draws in funds, repackages them and issues them as other instruments to other units. In order to explore this, a three-dimensional "from-whom-to-whom" style of presentation is needed. The three-dimensional table of financial transactions is usually presented as a series of matrices, one matrix for each kind of financial instrument showing the flows from one sector to another.

3.173 As such a presentation is not necessarily useful for actually presenting the data, other presentations may be preferred in practice for publication. For example, a table showing each type of financial asset cross-classified by debtor sector and each type of liability cross-classified by creditor sectors may be considered. As compared to the presentation of the financial accounts made in the integrated sequence of economic accounts, this means, in short, introducing a sector distinction below headings of financial instruments when relevant.

3.174 In the integrated sequence of economic accounts, balance sheets are also presented in a very aggregated way. For each sector or subsector more complete balance sheets may be built up using the detailed classification of assets and liabilities when appropriate. Changes in assets and liabilities for each sector may also be analysed for each type of asset and liability and each source of change.

3.175 In addition, three-dimensional tables may be elaborated showing the "from-whom-to-whom" links for each type of financial instrument, to permit better analysis. The presentation of such tables is exactly the same as for tables of financial transactions except that the stock of assets or liabilities is shown instead of changes in assets or liabilities and the net financial position of each sector appears instead of its net lending or borrowing. These tables closely follow the principles for the similar flow tables..

3.176 From whom-to-whom-tables are also useful for current transactions, such as property income and current transfers, as well as capital transfers. In the case of various property income items, a link may be established with related assets and liabilities in the balance sheets on a from-whom-to-whom basis.

3.177 More details on from-whom-to-whom tables are provided in chapter 37.

3. Introducing thematic and extended accounts and tables

3.178 In some cases, working with the integrated framework of national accounts, even in a flexible way, is not sufficient. Even when conceptually consistent, the integrated framework may become overburdened with details. Moreover, some requirements may conflict with the concepts and architecture of the integrated framework.

3.179 In some types of analysis, the basic intention is not to use alternative economic concepts, but simply to focus on a certain field or aspect of economic and social behaviour in the context of national accounts. The intent is to make apparent and to describe in more depth aspects that are hidden in the accounts of the integrated framework or surface only to a limited extent. Tourism is a good example. Various aspects of producing and consuming activities connected with tourism may appear in detailed classifications of activities, products and purposes. However, transactions and purposes specific to tourism appear separately in only a few cases. In order to describe and measure tourism in a national accounts framework, it is necessary to make a choice between two approaches: either subdivide many elements in the accounts of the integrated framework to get the required figures for tourism and pay the price of overburdening and unbalancing the various components of the accounts, or elaborate a specific framework for tourism. The latter approach also allows adaptation of the various classifications and measurement of additional aggregates, such as national expenditure on tourism, which may cover intermediate as well as final consumption.

3.180 In other types of analysis, more emphasis is given to alternative concepts. For instance, the production

boundary applied in the integrated framework of national accounts may be changed, generally by enlarging it, for example, the production of domestic services by members of the household for their own final consumption may be brought within the production boundary. The concept of produced non-financial assets and the related capital formation may be broadened, by covering consumer durables or human capital. In these approaches, the economic process itself is depicted differently and complementary or alternative aggregates are calculated. In all cases, however, the links with the integrated framework are made explicit; there are a number of common elements and any contradictory features are introduced, not by chance, but after explicitly considering various ways of looking at reality.

3.181 Those special constructs, which are consistent with but not fully integrated with the integrated framework of national accounts, are called either thematic accounts/tables or extended accounts/tables. Thematic accounts/tables increase the visibility of certain key activities by compiling more granular decompositions and by compiling alternative aggregations that summarize the relevant granular data, as described above. Important examples of thematic accounts and tables included in the SNA are the following:

- digital supply and use tables, to better capture the impact of digitalisation on the economy (chapter 22);
- "extended" supply and use tables, to arrive at improved analysis of the impact of globalisation on the domestic economy (chapter 23);
- tables on non-bank financial intermediation, to capture related financial risks and vulnerabilities (chapter 29);
- thematic accounts for non-profit institutions and other social economy institutions (chapter 31);
- thematic accounts on education and training (chapter 34);
- thematic accounts for health (chapter 34); and
- thematic accounts for tourism (chapter 38).

3.182 Extended accounts/tables include imputed values for indicators measured in monetary units and/or non-monetary indicators measured in physical units. They typically expand the production boundary as well as the asset boundary applied in the integrated framework of national accounts. Important examples of extended accounts are often related to supporting the monitoring of certain aspects that contribute to the well-being of people, including its sustainability. They are the main topic of chapters 34 and 35, as follows:

- extended accounts on unpaid household service work (chapter 34); and
- extended accounts on human capital (chapter 35).

3.183 General details on the compilation of thematic and extended accounts are provided in chapter 38.

3.184 No thematic or extended accounts/tables are defined in relation to environmental issues. For this purpose, the *SEEA* provides an integrated framework complementary to the integrated framework of the SNA. Two sets of international standards are available in this area. *SEEA Central Framework* applies and adapts the accounting rules and treatments of the integrated framework of the SNA with the intent of supporting the integration of environmental data with the standard economic data organised within the SNA's integrated framework. In doing so, the various stocks of natural resources are also defined from a physical rather than a monetary perspective. In the second set of standards, the *SEEA Ecosystem Accounting*, the scope of natural capital is extended to recognise benefits beyond those recognised in the integrated framework of national accounts, by also accounting for ecosystem assets and the services that can be derived from these assets. More details, including information on the accounting for sustainability more broadly, are provided in chapter 35.

B. The main foundations

Chapter 4: Flows, stocks and accounting rules

This is a common chapter with chapter 3 of *BPM7*, and for the most part, the text is identical in both the *2025 SNA* and *BPM7*.

A. Introduction

4.1 The sequence of economic accounts of the SNA is a system of accounts designed to measure stocks of, and changes in, economic value and to identify the person, group of persons, legal or social entity with claims on the economic value, including such claims between residents and non-residents. This chapter discusses the concept of stocks of economic value, the flows that reflect changes in economic value and the accounting rules applied to the recording of stocks and flows. In order to portray stocks and flows in an accounting system, it is necessary to identify the parties with a claim to economic value measured in stocks or affected by flows. These parties are the persons, groups of persons, legal and social entities already referred to. They are described as institutional units in the sequence of economic accounts and are grouped into institutional sectors according to their economic objectives, functions and behaviour. Units and sectors are the subject of chapter 5 on Institutional units and sectors, economic territory and residence.

4.2 Stocks measure economic value at a point in time. Flows measure changes in economic value over a period of time. Stocks appear in the balance sheets. Flows appear in all the other accounts and tables of the sequence of economic accounts. The flow accounts in the full sequence of economic accounts for institutional sectors in the SNA consist of the current accounts, which deal with production, income and use of income, and the accumulation accounts (capital account, financial account and other changes in assets and liabilities account), which show all changes between two balance sheets.

4.3 In order to have a system that is complete and consistent, all changes in economic value between stock measures at two points in time must be captured in flows. The first requirement in specifying the accounting conventions is thus to define precisely what is meant by stocks and flows. Once that is done, the rules to set the changes in economic value within an accounting system need to be specified. These rules are defined to ensure that the sequence of economic accounts is consistent in terms of value, time of recording and classification.

1. Stocks and flows

4.4 ***Stocks refer to the levels of financial/non-financial assets or liabilities at a point in time. In the case of financial assets/liabilities, usually the term "positions" is used while for levels of non-financial assets, the term "stocks" is often applied***. The sequence of economic accounts records stocks in accounts, usually referred to as balance sheets, compiled in respect of the beginning and the end of the accounting period. However, stocks are connected with flows: they result from the accumulation of prior transactions and other flows, and they are changed by transactions and other flows in the period. They result in fact from a continuum of entries and withdrawals, with some changes in volume or in value occurring during the time a given asset or liability is held.

4.5 ***An asset is a store of value representing an economic benefit or series of economic benefits accruing to the economic owner by holding or using the item over a period of time. It is a means of carrying forward value from one accounting period to another***. Assets may be financial in nature or not. For almost all financial assets, there is a corresponding liability. ***Liabilities are obligations where one unit (the debtor) is obliged, under specific circumstances, to provide funds or other resources to another unit (the creditor). These include shares and other equity in corporations.*** An elaboration of these definitions and the concepts embodied in them as well as a typology of the different assets and liabilities in the sequence of economic accounts is given in section C of this chapter.

4.6 ***(Economic) flows are transactions and other flows reflecting the creation, transformation, exchange, transfer or extinction of economic value; they typically involve changes in the volume, composition, or value of an institutional unit's assets, liabilities and net worth.*** Mirroring the diversity of the economy, economic flows have specific natures such as wages, taxes, interest, capital flows, etc., most of which record

the ways in which an institutional unit's assets and liabilities are changed.

4.7 Economic flows consist of transactions and other flows. ***Transactions are economic flows that are interactions between institutional units by mutual agreement or through the operation of the law, or actions within an institutional unit that are analytically useful to treat like transactions because the unit is operating in two different capacities.*** The value of an asset or a liability may be affected by economic flows that do not satisfy the requirements of a transaction. Such flows are described as "other flows". ***Other flows are changes in the value of assets and liabilities not due to transactions. They consist of other changes in the volume of assets and liabilities and revaluations. In the external accounts, the other changes in assets and liabilities are restricted to those relating to financial assets and liabilities.*** Examples are losses due to natural disasters and the effect of price changes on the value of assets and liabilities.

4.8 There is a discussion of the different types of economic flows in section B of this chapter.

2. Balancing items

4.9 Economic flows are grouped together into accounts with expenditures or changes in assets on the left-hand side and revenues, or changes in liabilities or net worth on the right-hand side. ***A balancing item is an accounting construct obtained residually as the difference between the total value of the entries on one side of an account (credits, revenues or changes in liabilities) and the total value of the entries on the other side (debits, expenditures or changes in assets). It cannot be measured independently of the entries in the accounts***. There is also a balancing item for the balance sheet where the difference between assets and liabilities is known as net worth.

4.10 Balancing items are constructed because they convey interesting economic information. Many of the key aggregates of the sequence of economic accounts actually emerge as balancing items. Balancing items are discussed in section D.

3. Grouping stocks and flows into accounts

4.11 The accounts and tables of the sequence of economic accounts contain information relating to the economic actions or events that take place within a given period of time and the effect of these events on the stocks of assets and liabilities between the beginning and the end of that period.

4.12 The flows and stocks are grouped according to the classification hierarchy of the SNA, shown in annex 2. The classification of transactions and other flows has five headings at the highest level, dealing with transactions in products, transactions showing how income is distributed and redistributed, transactions in non-produced assets, transactions in financial assets and liabilities, and other accumulation entries. In the accumulation accounts, the hierarchy may show both the transaction and the type of asset it applies to.

4.13 The flows and stocks are entered in the accounts of the institutional units involved and thus in the accounts of the sectors into which the institutional units are grouped. Institutional units and sectors are the subject of chapter 5 on Institutional units and sectors, economic territory and residence. In general, flows and stocks are entered in the accounts of the institutional units that own or owned the goods and assets involved, in the accounts of units that deliver or take delivery of services, or in the accounts of units that provide labour and capital or use them in production. For some purposes, an institutional unit participating in production is viewed as one or more establishments and establishments may be grouped into industries. Establishments and industries are defined and discussed in chapter 6 on Enterprises, establishments and industries.

4. Accounting rules

4.14 All entries in the accounts have to be measured in monetary terms, and therefore the elements from which the entries are built up must be measured in monetary terms. In some cases, the amounts entered are the actual payments that form part of flows that involve money; in other cases the amounts entered are estimated by reference to actual monetary values. Money is thus the unit of account in which all stocks and flows are recorded.

4.15 In principle, any lapse of time may be chosen as the accounting period. Periods that are too short have the disadvantage that statistical data are influenced by incidental factors, while long periods do not adequately portray changes going on in the economy. Merely seasonal effects can be avoided by having the accounting period cover a whole cycle of regularly recurrent economic phenomena. Most business and government accounting refers to complete years. In general, calendar or financial years or quarters are best suited for drawing up a full sequence of economic accounts for institutional sectors.

4.16 The sequence of economic accounts covers all economic activity in such a way that it is possible to derive accounts for individual groups of units or for all units in the economy. To permit this, the accounting rules ensure consistency with respect to valuation, timing, classification and grouping of flows and stocks. These rules are summarized below to provide a context for the discussion of the nature of flows, stocks, and balancing items in sections B, C and D.

- Flows and stocks must be recorded consistently with respect to their valuation. Entries are at current value on the market (that is, the amount agreed upon by knowledgeable, willing parties in a transaction at arm's length) or at its closest equivalent. The value on the market may need to be adjusted to the coverage of the flow or stock as defined in the sequence of economic accounts and expressed appropriately given the nature of the flow or stock with respect to taxes and subsidies on products, transport costs and distribution margins.
- Flows and stocks must be recorded consistently with respect to timing. Flows are recorded at the moment of accrual within the accounting period (that is, the moment economic value is created, transformed, exchanged, transferred or extinguished). Stocks are recorded at the moment to which the account relates, typically the beginning or the end of the accounting period.
- Individual flow and stock entries must be recorded consistently with respect to their classification, both in respect of the categories in the classifications of transactions, other flows and assets and the categories in the classification of transactors as (sub)sectors (or industries).
- Depending on the character of the entry, a distinction should be made between revenues and expenditures or between assets and liabilities. In the process of grouping, netting is implicit for several items, but consolidation is not advised.

4.17 The basic accounting framework of the sequence of economic accounts is one of quadruple accounting. This implies that a transaction gives rise to two entries for each party to the transaction. There is vertical consistency within each unit and horizontal consistency between the two units for each type of entry. The principles of quadruple accounting are explained in more detail in section E in this chapter.

B. Flows

4.18 Economic flows are of two kinds. The first kind consists of transactions. Flows that do not meet the characteristics of transactions as described below are called "other flows". Transactions appear in all of the accounts and tables in which flows appear except the other changes in the volume of assets and liabilities account and the revaluation account. Other flows appear in only these two accounts. More meaning can be given to the definition of flows by describing the two kinds.

1. Transactions

4.19 ***Transactions are economic flows that are interactions between institutional units by mutual agreement or through the operation of law, or actions within an institutional unit that are analytically useful to treat like a transaction because the unit is operating in two different capacities***.

4.20 Institutional units, referred to in the definition, are the fundamental economic units used in the sequence of economic accounts of the SNA, external accounts and other macroeconomic statistics. They are described and defined in chapter 5 on Institutional units and sectors, economic territory and residence. The following are the main attributes of institutional units that are relevant to their engaging in transactions:

- They are entitled to own assets in their own right, and therefore are able to exchange them;

- They are able to take economic decisions and engage in economic activities for which they are held to be directly responsible and accountable at law;
- They are typically able to incur liabilities on their own behalf, to take on other obligations or future commitments and to enter into contracts; in some exceptional cases units may qualify as institutional units, even though they may not be able to incur liabilities on their own behalf, an example being certain local government units.

4.21 The definition of a transaction stipulates that an interaction between institutional units be by mutual agreement. When a transaction is undertaken by mutual agreement, the prior knowledge and consent of the institutional units is implied. This does not mean, however, that both units necessarily enter a transaction voluntarily, because some transactions are imposed by force of law, such as payments of taxes or other compulsory transfers. Although individual institutional units are not free to fix the amounts of taxes they pay, there is nevertheless collective recognition and acceptance by the community of the obligation to pay taxes. Thus, payments of taxes are considered transactions despite being compulsory.

4.22 Transactions take so many different forms that, even with these explanations, any general definition is inevitably rather imprecise. To give more precision, the various kinds of transactions have to be systematically described and classified. A first distinction is between monetary and non-monetary transactions. Other distinctions, such as between transactions with and without a quid pro quo, are drawn within each of these kinds of transactions. Frequently the individual, identifiable transactions of everyday economic life are simply grouped together in the accounts; sometimes they are subdivided and rearranged in order to form the transaction categories of the sequence of economic accounts.

Monetary transactions

4.23 ***Monetary transactions are transactions in which one institutional unit makes a payment (receives a payment) or incurs a liability (acquires a financial asset) stated in units of currency.*** In the sequence of economic accounts, all flows are recorded in monetary terms, but the distinguishing characteristic of a monetary transaction is that the parties to the transaction express their agreement in monetary terms. For example, a good is purchased or sold at a given number of units of currency per unit of the good, or labour is hired or provided at a given number of units of currency per hour or day.

4.24 All monetary transactions are interactions between institutional units; that is, all monetary transactions are two-party transactions. The following is a list of common monetary transactions:

- Purchases of goods and services;
- Acquisitions of securities;
- Wages and salaries;
- Interest, dividends and rent;
- Taxes;
- Social assistance benefits in cash.

Transactions with and without a recompense

4.25 The purchases of goods and services, the acquisitions of securities, wages and salaries, interest, dividends, and rent are two-party transactions in which one party provides a good, service, labour or asset to the other and receives a recompense of commensurate value in return. This kind of transaction is sometimes called a "something for something" transaction or a transaction with a quid pro quo. Such transactions are also referred to as exchanges.

4.26 Taxes and social assistance benefits are examples of two-party transactions in which one party provides a good, service or asset to the other but does not receive a recompense in return. This kind of transaction, sometimes called a "something for nothing" transaction, or a transaction without a quid pro quo, is called a transfer in the sequence of economic accounts.

4.27 The scope of the recompenses mentioned in describing exchanges and transfers does not cover entitlement to contingent benefits or collective services. Such benefits are generally uncertain or not quantifiable, or both. Moreover, the amount of benefit that may eventually be received by an individual unit is not proportional to the amount of the previous payment and may be much greater or smaller than the latter. Thus, payments such as a social insurance contribution or a non-life insurance premium may entitle the unit making the payment to some contingent future benefits, and a household paying taxes may be able to consume certain collective services provided by government units, but these payments are regarded as transfers rather than exchanges.

4.28 A distinction is made between current and capital transfers. ***A capital transfer (D9)is an unrequited transfer, either in cash or in kind, linked to the acquisition, disposal or transfer of an asset (other than cash or inventories); or where a liability is forgiven or assumed; or where the transfers are intended to address accumulated losses incurred over a multi-year period.*** Capital transfers redistribute wealth but leave saving unaffected. They include, for example, capital taxes and investment grants. Other transfers are described as current. Current transfers redistribute income. They include, for example, taxes on income and social benefits. A fuller description of transfers appears in chapter 9 on Transfer income accounts.

Rearrangements of transactions for statistical purposes

4.29 Monetary transactions may not always be recorded in the sequence of economic accounts of the SNA, *BPM* and other macroeconomic accounts in the same way as they appear to the institutional units involved. The values of these actual, or observed, transactions are already available in the accounts of the units concerned, but in the sequence of economic accounts certain transactions are rearranged to bring out the underlying economic relationships more clearly. There are three kinds of rearrangements that affect the channels through which the transactions are seen as taking place, the number of transactions that are seen as taking place, or the units that are seen as being involved. The three sections below illustrate the main characteristics of these rearrangements and the kind of analytical purpose they serve.

Rerouting transactions

4.30 Rerouting records a transaction as taking place through channels that differ from the actual ones or as taking place in an economic sense when it does not take place in fact. In the first kind of rerouting, a direct transaction between unit A and unit C is recorded as taking place indirectly through a third unit B, usually, however, with some change in the transaction category. In the second kind of rerouting, a transaction of one kind from unit A to unit B is recorded with a matching transaction of a different kind from unit B to unit A.

4.31 The recording of the payment of social security contributions is an example of the first kind of rerouting. In practice, employers typically deduct the contributions that the employees are obliged to make to social security funds from the employee's wages and salaries. In addition, the employers make contributions to social security funds from their own resources on behalf of the employees. Both contributions go directly from the employer to social security funds. However, in the sequence of economic accounts the employers' contributions are treated as part of remuneration of employees and are recorded as being paid to the employee. The employee is then recorded as making a payment to social security funds consisting of both the employer's and employee's own contributions. Social security contributions are thus recorded strictly according to the general principles governing the recording of transactions in the sequence of economic accounts to bring out the economic substance behind arrangements adopted for administrative convenience. As a result of the rerouting, employers' social contributions are included as a part of labour cost. (See chapter 8 on Earned income accounts.)

4.32 Similarly, the transfer elements of lotteries and other gambling are transactions through the gambling operator, but they are rerouted to occur directly between those participating in the lottery or gambling, that is, between households and possibly to charities; see paragraphs 9.142 and 9.143.

4.33 An example of the second kind of rerouting is provided by the treatment of the retained earnings of foreign direct investment enterprises. The retention of some or all of the earnings of a foreign direct investment enterprise within that enterprise can be regarded as a deliberate investment decision by the foreign owners. Accordingly, the retained earnings are rerouted in the sequence of economic accounts, by showing them as

first remitted to the foreign owners as property income and then reinvested in the equity of the direct investment enterprise; see paragraphs 8.143 to 8.146. Retained earnings of investment funds are also treated as if they were distributed to shareholders who are then deemed to reinvest them in the investment fund; see paragraph 8.161.

4.34 Similarly, the property income earned on the life insurance and annuity entitlements of life insurance corporations is deemed to be paid out to policyholders and then paid back again as premium supplements even though in actuality the property income is retained by the insurance corporations. As a result, the saving of persons or households includes the amount of the rerouted property income while the saving of insurance corporations does not. This alternative picture of saving, which better reflects economic reality, is the purpose of the rerouting. For more details, see paragraphs 8.148 to 8.158.

4.35 Another example of the second kind of rerouting relates to government having a non-resident unit that undertakes fiscal functions related to government borrowing or incurring government outlays abroad between the government and the non-resident unit related to these fiscal activities. In these cases, transactions are imputed in the accounts of both the government and the non-resident unit to reflect the fiscal activities of the government. For more details, see chapter 30 on General government and the public sector.

4.36 A further example of this type of rerouting, i.e., the recording of implicit taxes or subsidies associated with a multiple exchange rate regime is discussed in paragraphs 8.99 (e), 8.100 (c) and 8.109 (c).

Partitioning transactions

4.37 Partitioning records a transaction that is a single transaction from the perspective of the parties involved as two or more differently classified transactions. For example, the rental actually paid by the lessee under a financial lease is not recorded as a payment for a service; instead, it is partitioned into two transactions, a repayment of principal and a payment of interest. This partitioning of the rental payment is part of a treatment that implements an economic view of financial leasing in the integrated framework of the SNA. Financial leasing is viewed as a method of financing the purchase of a fixed asset and a financial lease is shown in the integrated framework as a loan from the lessor to the lessee. For a further elaboration, see chapter 27 on Contracts, leases, licenses and permits.

4.38 Partitioning of transactions in assets may also be relevant in the case of non-financial assets which are used for two distinct purposes. An example is the purchase of a car by a household, which is partly used in production, such as providing taxi services to third parties, and partly used for own personal use. The former part is considered as gross fixed capital formation, while the latter part is to be recorded as final consumption expenditure.

4.39 Another example is the treatment of certain financial services. For example, the integrated framework of the SNA prescribes partitioning interest payable by financial intermediaries on deposits and payable to financial intermediaries on loans into two components. One component represents interest as defined in the integrated framework of the SNA, while the remainder represents the purchase of financial intermediation services for which the intermediaries do not charge explicitly. The purpose of the partitioning is to make the service item explicit. In consequence, intermediate and final consumption of particular industries and institutional sectors as well as gross domestic product (GDP) are affected. However, the saving of all the units concerned, including the financial intermediaries themselves, is not affected. See paragraphs 7.180 to 7.189.

4.40 Partitioning is also involved when a financial derivative is settled with the delivery of the underlying asset. This single event should be broken down into a transaction in the financial derivative and a separate transaction in the underlying asset.

4.41 The recording in the integrated framework of the SNA of transactions for wholesalers and retailers also does not mirror the way in which those involved view them. The purchases of goods for resale by wholesalers and retailers are not recorded by these units explicitly, and they are viewed as selling, not the goods, but the services of storing and displaying a selection of goods in convenient locations and making them easily available for customers. This partitioning measures output for traders by the value of the margins realized on goods they purchase for resale.

4.42 A final example of partitioning transactions concerns the recording of package tours offered by tour

operators, where it is recommended to unbundle the total amounts paid into the various service components; see paragraphs 15.127 and 15.128.

Reassigning transactions

4.43 Reassignment refers to the recording of a (financial) transaction arranged by a third party on behalf of others as taking place directly by the two principal parties involved. Many service activities consist of one unit arranging for a (financial) transaction to be carried out between two other units in return for a fee from one or both parties to the transaction. In such a case, the (financial) transaction is recorded exclusively in the accounts of the two parties engaging in the transaction and not in the accounts of the third party facilitating the transaction. Some service output may be recognized with the facilitator. For example, purchases a commercial agent makes under the orders of, and at the expense of, another party are directly attributed to the latter. The accounts of the agent only show the fee charged to the principal for the facilitation services rendered.

4.44 A second example is the collection of taxes by one government unit on behalf of another. The SNA sequence of economic accounts follows the guidance of the *GFSM 2014*. In general, a tax is attributed to the government unit that

- exercises the authority to impose the tax (either as a principal or through the delegated authority of the principal), and
- has final discretion to set and vary the rate of the tax.

4.45 Any amount retained by the collecting government unit, such as under a tax-sharing arrangement, should be treated as a current transfer. If the collecting government unit was delegated the authority to set and vary the rate, then the amount collected should be treated as tax revenue of this government unit.

4.46 Where different government units jointly and equally set the rate of a tax and jointly and equally decide on the distribution of the proceeds, with no individual government unit having ultimate overriding authority, then the tax revenues are attributed to each government unit according to its respective share of the proceeds. If an arrangement allows one government unit to exercise ultimate overriding authority, then all of the tax revenue is attributed to that unit.

4.47 There may also be the circumstance where a tax is imposed under the constitutional or other authority of one government unit, but other government units individually set the tax rate in their jurisdictions. The proceeds of the tax generated in each respective government unit's jurisdiction are attributed as tax revenues of that government unit.

4.48 Similar principles are applied for the payment of subsidies or social benefits.

Non-monetary transactions

4.49 ***Non-monetary transactions are transactions that are not initially stated in units of currency.*** The entries in the integrated framework of the SNA therefore represent values that are indirectly measured or otherwise estimated. In some cases, the transaction may be an actual one and a value has to be estimated to record it in the accounts. Barter is an obvious example. In other cases, the entire transaction must be constructed and then a value estimated for it. Depreciation is an example.

4.50 The amounts of money associated with non-monetary transactions are entries whose economic significance is different from cash payments as they do not represent freely disposable sums of money. The various methods of valuation to be employed for non-monetary transactions are dealt with in the section on valuation in section E.

4.51 Non-monetary transactions can be either two-party transactions or actions within an institutional unit. The two-party transactions consist of barter transactions, remuneration in kind, payments in kind other than remuneration in kind and transfers in kind. These two-party transactions are discussed first, followed by a discussion of internal transactions.

4.52 Although two-party transactions in kind do exist in practice, in the sequence of economic accounts they are frequently recorded in the same way as a monetary transaction with an associated expenditure of the item provided in kind. This ensures that there is a change in wealth of the donor without the donor acquiring the product transferred while the recipient acquires the product without any change in wealth. There is further discussion on this in respect of current transfers in chapter 9 on Transfer income accounts and of capital transfers in chapter 11 on Capital account.

Barter transactions

4.53 Barter transactions involve two parties, with one party providing a good, service or asset other than cash to the other in return for a good, service or asset other than cash. As mentioned above, barter is an example of an actual transaction for which a value must be estimated. Barter transactions in which goods are traded for goods have always been important. The barter of goods may be systematically organized on proper markets or, in some countries, may occur only sporadically on a small scale. Barter between nations involving exports and imports also occurs. As crypto assets without a corresponding liability designed to act as a medium of exchange are classified as non-produced non-financial assets, any payments with these crypto assets are also barter transactions.

Remuneration in kind

4.54 Remuneration in kind occurs when an employee accepts payment in the form of goods and services instead of money or another financial asset. This practice is extensive in most economies for reasons ranging from the desire of employers to find captive markets for part of their output, to tax avoidance or evasion. Remuneration in kind takes various forms and the following list includes some of the most common types of goods and services provided without charge, or at reduced prices, by employers to their employees:

- Meals and drinks;
- Housing services or accommodation of a type that can be used by all members of the household to which the employee belongs;
- The services of vehicles provided for the personal use of employees;
- Goods and services produced as outputs from the employer's own processes of production, such as free transport services provided to employees of transport companies.

Further, in addition to goods and services, some employees may be willing, or obliged, to accept part of their remuneration in the form of financial or other assets.

Payments in kind other than remuneration in kind

4.55 Payments in kind other than remuneration in kind occur when any of a wide variety of payments is made in the form of goods and services rather than money. For example, a doctor may accept payment in wine instead of money. Or, instead of paying rent or rentals in money, the user of land or fixed capital, respectively, may pay the owner in goods or services. In agriculture, for example, the "rent" may be paid by handing over part of the crops produced to the landlord. (This is known as share cropping.) Tax payments, also, may be paid in kind; for example, inheritance taxes may be paid by making donations of paintings or other valuables.

Transfers in kind

4.56 As noted above, transactions in kind are normally recorded in the accounts as if they are monetary transfers followed by the expenditure by the recipient on the products concerned. This treatment applies to government international cooperation, gifts and charitable contributions. Government international cooperation, gifts, and charitable contributions are often made in kind for convenience, efficiency, or tax purposes. For example, international aid after a natural disaster may be more effective and delivered faster if made directly in the

form of medicine, food and shelter instead of money. Charitable contributions in kind sometimes avoid taxes that would be due if the item in question were sold and the money given to the charity.

4.57 A special case of transfers in kind is that of social transfers in kind. These consist of goods and services provided by general government and non-profit institutions serving households (NPISHs) that are delivered to individual households. Health and education services are the prime examples. Rather than provide a specified amount of money to be used to purchase medical and educational services, the services are often provided in kind to make sure that the need for the services is met. (Sometimes the recipient purchases the service and is reimbursed by the social insurance or social assistance scheme. Such a transaction is still treated as being in kind because the recipient is merely acting as the agent of the social insurance scheme.)

4.58 Social transfers in kind are recorded as an implicit transfer of income from government and NPISHs to households and a transfer of consumption goods and services. The measure of income after the transfer is called disposable income adjusted for social transfers in kind (rather than disposable income) and the measure of consumption is called actual final consumption (rather than final consumption expenditure).

Internal transactions

4.59 The integrated framework of the SNA treats certain kinds of actions within a unit as transactions to give a more analytically useful picture of final uses of output and of production. These transactions that involve only one unit are called internal, or intra-unit, transactions.

4.60 Some households, all NPISHs and general government units, and the central bank operate as both producers and as final consumers. When an institutional unit engages in both activities, it may make the choice to consume some or all of the output itself after the production is completed. In such a case, no transaction takes place between institutional units, but it is useful to construct a transaction and estimate its value to record both output and consumption in the accounts.

4.61 For households, the principle in the integrated framework of the SNA is that all goods produced by persons that are subsequently used by the same persons, or members of the same households, for purposes of final consumption are to be included in output in a manner analogous to that for goods sold on the market. This means that transactions are assumed in which the persons responsible for the production of the goods are deemed to deliver the goods to themselves as consumers, or members of their own households, and then values have to be associated with them in order to enter them in the accounts. The same holds for the production of services for own final use by households which are considered to be part of the production boundary applied in the integrated framework of national accounts, owner-occupied housing services being the most important example.

4.62 Establishments owned by governments or NPISHs commonly provide education, health, or other kinds of services to individual households, or society at large, without charge or at prices that are not economically significant. The costs of providing these services are incurred by the governments or NPISHs, and the values are recorded as internal transactions: that is, as final expenditures by governments or NPISHs on outputs produced by establishments they own themselves. The same holds for the central bank. (As already explained, the acquisition of these services by households is recorded separately under social transfers in kind, another form of non-monetary transactions that take place between the government units or NPISHs and the households in question.)

4.63 The integrated framework of the SNA recognizes several other transactions within enterprises to give a fuller view of production. For example, when enterprises produce fixed assets for their own use, the integrated framework records deliveries by the enterprises to themselves as the subsequent users. Also, when enterprises use fixed assets (whether own-account or purchased) during production, the integrated framework charges the decline in the value of the asset during the period of production as a cost of production.

4.64 The recording of deliveries between one establishment and another belonging to the same enterprise is discussed in paragraph 7.114.

Externalities and illegal actions

4.65 The sections above describe the kinds of actions that are considered transactions in the integrated framework of the SNA. This section focuses on externalities and illegal actions, explaining why externalities are not considered transactions and distinguishing among kinds of illegal actions that are and are not considered transactions.

Externalities

4.66 Certain economic actions carried out by institutional units cause changes in the condition or circumstances of other units without their consent. These are externalities; they can be regarded as unsolicited services, or disservices, delivered without the agreement of the units affected. A negative externality is an uncooperative action with undesirable consequences, which is the antithesis of a market transaction. On the other hand, a positive externality is one where actions carried out by institutional units have a positive impact, for example more positive health outcomes related to expenditures to increase the level of education.

4.67 It is necessary to consider, however, whether values should be assigned to such externalities. Economic accounts have to measure economic functions such as production or consumption in the context of a particular legal and socio-economic system within which relative prices and costs are determined. Further, there would be considerable technical difficulties involved in trying to associate economically meaningful values with externalities when they are intrinsically non-market phenomena. As externalities are not market transactions into which institutional units enter of their own accord, there is no mechanism to ensure that the positive or negative values attached to externalities by the various parties involved would be mutually consistent. Moreover, accounts including values for externalities could not be interpreted as representing equilibrium, or economically sustainable, situations. If such values were to be replaced by actual payments the economic behaviour of the units involved would change, perhaps considerably.

4.68 A typical example of a negative externality is the pollution by one producer of the air or water used by other units for purposes of production or consumption. If the producer is allowed to pollute without charge or risk of being penalized, the private costs of production of the polluter will be less than the social costs to the community. Some countries, at least at certain points in their history, may choose to frame their laws so that some producers are permitted to reduce their private costs by polluting with impunity. This may be done deliberately to promote rapid industrialization, for example. The wisdom of such a policy may be highly questionable, especially in the long run, but it does not follow that it is appropriate or analytically useful for economic accounts to try to correct for presumed institutional failures of this kind by attributing costs to producers that society does not choose to recognize. For example, the whole purpose of trying to internalize some externalities by imposing taxes or other charges on the discharge of pollutants is to bring about a change in production methods to reduce pollution. A complete accounting for externalities would be extremely complex as it is not sufficient merely to introduce costs into the accounts of the producers but would also necessitate introducing various other adjustments of questionable economic significance to balance the accounts.

4.69 This sort of example illustrates why some analyses are best carried out in the context of an extended account where some of the normal constraints and conventions of the integrated framework of the SNA are relaxed. In the case of pollution, the *SEEA* has been developed precisely to explore this issue among other environmental topics.

Illegal actions

4.70 Macroeconomic statistics, including the integrated framework of national accounts, cover all economic phenomena irrespective of whether they are illegal or legal. Illegal actions that fit the characteristics of transactions (notably the characteristic that there is mutual agreement between the parties) are therefore treated the same way as legal actions. The production or consumption, including exports and imports, of certain goods or services, such as narcotics, may be illegal but market transactions in such goods and services have to be recorded in the accounts. It is important to note that the differences in the definition of illegal transactions between economies or within an economy over time would cause inconsistencies in the

integrated framework of national accounts if illegal transactions were omitted. Furthermore, illegal transactions generally affect other legal transactions (e.g., certain legal financial assets may be purchased with income generated through illegal transactions). If expenditures on illegal goods or services by households were to be ignored on grounds of principle, household saving would be overestimated and households presumed to obtain assets that they do not in fact acquire. Similarly, if exports and imports of illegal goods and services were to be ignored, the external balance on goods and services would be misrepresented. Clearly, the accounts as a whole are liable to be seriously distorted if monetary transactions that in fact take place are excluded. It may be difficult to obtain high-quality estimates about illegal transactions, but in principle they should be included in the accounts if only to reduce error in other items, including balancing items.

4.71 However, many illegal actions are crimes against persons or property that in no sense can be construed as transactions. For example, theft can scarcely be described as an action into which two units enter by mutual agreement. Conceptually, theft or violence is an extreme form of externality in which damage is inflicted on another institutional unit deliberately and not merely accidentally or casually. Thus, thefts of goods from households, for example, are not treated as transactions and estimated values are not recorded for them under household expenditures.

4.72 If thefts, or acts of violence (including war), involve significant redistributions, or destructions, of assets, it is necessary to take them into account. As explained below, they are treated as other flows, not as transactions.

2. Other flows

4.73 ***Other flows are changes in the value of assets and liabilities not due to transactions. They consist of other changes in the volume of assets and liabilities and revaluations. In the external accounts, the other changes in assets and liabilities are restricted to those relating to financial assets and liabilities.*** The reason that these flows are not transactions is linked to their not meeting one or more of the characteristics of transactions. For example, the institutional units involved may not be acting by mutual agreement, as with an uncompensated seizure of assets. Or the change may be due to a natural event such as an earthquake rather than a purely economic phenomenon. Alternatively the value of an asset expressed in foreign currency may change as a result of an exchange rate change.

4.74 The entries for other flows appear in one of the two accounts that comprise the other changes in assets and liabilities accounts. The other changes in the volume of assets and liabilities account includes changes that lead to a change in value of an asset because of a change in the quantity or physical characteristics of the asset in question. The revaluation account includes changes in the value of assets, liabilities, and net worth due to only changes in the level and structure of prices, which are reflected in holding gains and losses.

Other changes in the volume of assets and liabilities

4.75 Other changes in the volume of assets and liabilities fall into three main categories.

4.76 The first category relates to the appearance and disappearance of assets and liabilities other than by transactions. Some of these may relate to naturally occurring assets, such as mineral and energy resources, so that the entrances come about as interactions between institutional units and nature. Others relate to assets created by human activity, such as valuables. For valuables, for example, the capital account records their acquisition as newly produced goods or imports in transactions, and it records transactions in existing goods already classified as valuables. It is the recognition of a significant or special value for goods not already recorded in the balance sheets that is considered an economic appearance to be recorded as an other flow. These valuables may not be in the balance sheets for any of several reasons. For example, they may antedate the accounts or were originally recorded as consumption goods.

4.77 Write-offs of claims by creditors, as well as monetization and demonetization of gold bullion, also typically feature under this first category. However, if debt forgiveness is provided, such as in a non-commercial setting, transactions are recorded. In the case of debt cancellations, it may sometimes be unclear whether they should be classified as transactions or other flows. In commercial settings, in the absence of specific information, debt cancellation can be treated as other changes in the volume of assets and liabilities. On the

other hand, assumption of debts arising from the activation of guarantees and rescheduling of debts is typically the result of a mutual agreement between the parties involved, and, hence, should be classified as transactions. See chapter 13 on Other changes in assets and liabilities accounts for more details.

4.78 Crypto assets without a corresponding liability designed to act as a general medium of exchange, or designed to act as a medium of exchange within a platform or network only, are treated as non-produced non-financial assets. However, when these crypto assets are brought into circulation in exchange for production activities (e.g., proof-of-work, proof-of-stake, etc.), the emergence of the newly circulated crypto assets are not to be recorded as other changes in the volume of assets. Instead, the payments for the validation services are typically recorded, by convention, as cross-border transactions in crypto assets payable by the owners of the existing crypto assets to the producer of the services, with the new crypto assets, diluting the value of existing crypto assets. For a more elaborated example of the recording the validation of crypto assets, see Box 11.5 of *BPM7*. For more general information on the recording and classification of crypto assets, see chapter 22 on Digitalisation.

4.79 The second category relates to the effects of externalities and disasters. One such event is one institutional unit's effectively removing an asset from its owner without the owner's agreement, an action that is not considered a transaction because the element of mutual agreement is absent. These events also include those that destroy assets, such as natural disaster or war. In contrast, transactions, such as depreciation, depletion or change in inventories, refer to normal rates of loss or damage.

4.80 The third category relates to changes in assets and liabilities that reflect changes in the classification of institutional units among sectors and in the structure of institutional units, or in the classification of assets and liabilities. For example, if an unincorporated enterprise becomes more financially distinct from its owner and takes on the characteristics of a quasi-corporation, it and the assets and liabilities it holds move from the household sector to the non-financial corporations' sector and changes in the sector allocation of the assets and liabilities owned by the quasi-corporation are recorded under this heading.

4.81 Finally, changes in the status of existing financial claims and liabilities arising from the change in residence of individuals from one economy to another are treated as other changes in the volume of assets and liabilities. These flows result from a change in the classification of the owner's residence status, and hence, they should not be classified as transactions.

Revaluations (holding gains and losses)

4.82 Positive or negative nominal holding gains accrue during the accounting period to the owners of assets and liabilities as a result of a change in their prices. Holding gains are sometimes described as "capital gains", but the term "holding gains" is preferred here because it emphasizes that holding gains accrue purely as a result of holding assets or liabilities over time without transforming them in any way. Holding gains include not only gains on "capital" such as fixed assets, land and financial assets but also gains on inventories of all kinds of goods held by producers, including work-in-progress. Holding gains may accrue on assets held for any length of time during the accounting period, not only on assets held throughout the period and may thus appear for assets appearing on neither the opening balance sheet nor the closing balance sheet.

4.83 Nominal holding gains depend upon changes in the prices of assets and liabilities over time. The prices in question are the prices at which the assets may be sold on the market. Nominal holding gains may be further decomposed into neutral holding gains, which reflect changes in the general price level, and real holding gains which reflect changes in the relative prices of assets.

C. Stocks

4.84 Stocks, which in the case of financial assets and liabilities are also often referred to as positions, relate to the level of assets or liabilities at a point of time. In order to discuss stocks, it is necessary to define assets and liabilities, and these definitions depend crucially on the concepts of economic benefits and ownership. Once the definitions are clear, the way in which assets and liabilities are classified within a balance sheet are touched on as well as the way in which items enter and leave the balance sheet.

1. Economic benefits

4.85 The heart of the integrated framework of the SNA describes how labour, and non-financial assets, including land and other natural resources, are used to produce goods and services. These goods and services are used for the three economic activities recognized in the integrated framework, production, consumption and accumulation. An economic benefit is defined as denoting a gain or positive utility arising from an action. It implies a comparison between two states. This can be elaborated within the integrated framework so that economic benefits are seen as rewards for providing services, such as those of labour and capital to production and also the means of acquiring goods and services for production, consumption or accumulation in the current period or in future periods.

4.86 Sometimes the immediate economic benefit is in terms of goods and services directly, for example own account production or wages and salaries in kind. More often an economic benefit is in the form of the medium of exchange (money), for example as wages and salaries. Consumption is an activity that takes place in the current period only but may be financed from past economic benefits. Production and accumulation also involve economic benefits postponed to future periods. Thus, means of allowing economic benefits to be moved from one accounting period to another have to be recognized. These take the form of assets and liabilities where an economic benefit in one period is converted to an economic benefit in one or more future periods. Similarly goods and services, or current economic benefits, may be acquired by committing future economic benefits in the form of (financial) liabilities.

2. Ownership

4.87 Two types of ownership can be distinguished, legal ownership and economic ownership. ***The legal owner refers to the institutional unit entitled in law and sustainable under the law to claim the economic benefits associated with goods, services, natural resources, financial assets or liabilities (which may be different from the economic owner)***.

4.88 Sometimes government may claim ownership of an item on behalf of the community at large. No item that does not have an owner that can claim the associated economic benefits, either on an individual or collective basis, is recognized in the integrated framework of the SNA, *BPM* and other macroeconomic statistics.

4.89 The acts of production, consumption and accumulation involve varying degrees of risk. Two main forms of risk can be identified. The first sort refers to production. These arise because of such uncertainties as the demand for goods and services once produced, developments in the economy in general and technical innovation that affects the economic benefits to be earned from non-financial assets. The consequence is that economic benefits from non-financial assets and labour in the form of operating surplus and income from employment are not wholly predictable in advance, but embody a degree of risk.

4.90 The second type of risk refers to the process of transferring economic benefits between time periods. It arises because of uncertainty over interest rates and other financial developments in future periods, which in turn affects the comparative performance of different types of economic benefits.

4.91 When economic agents make decisions about consumption or accumulation, they have to make a judgement about the relative advantages of economic benefits being converted to goods and services in the current period as against conversion in a later period. Thus all economic activity involves both economic benefits and risks. Transferring economic benefits between time periods inevitably involves transferring risks also. An agent may opt for a lower but more certain economic benefit in future rather than an economic benefit that might be higher but is less certain. Of particular interest is the case when an agent swaps economic benefits and risks associated with production with those associated with financial assets and liabilities.

4.92 ***The economic owner refers to the institutional unit that is entitled to claim the economic benefits associated with the use of goods, services, natural resources, and financial assets in the course of an economic activity, and that is accepting the associated risks***

4.93 Every item has both a legal owner and an economic owner, though in many cases the economic owner and the legal owner of an item are the same. Where they are not, the legal owner has handed responsibility for the risk involved in using the item in an economic activity to the economic owner along with associated economic benefits. In return the legal owner accepts another package of risks and economic benefits from

the economic owner. In general within the integrated framework of the SNA, when the expression "ownership" or "owner" is used and the legal and economic owners are different, the reference should be understood to be to the economic owner. Chapter 27 on Contracts, leases, licences and permits discusses a number of cases where legal and economic ownership are different.

4.94 When government claims legal ownership of an item on behalf of the community at large, the benefits also accrue to the government on behalf of the community at large. Thus government is both the legal and economic owner of these items.

4.95 Especially in relation to natural resources, a government is typically the legal owner and grants rights or permissions to exploit the resources to another institutional unit. In such cases, the economic benefits may be shared between the government and the exploiter of the resources, and the economic ownership of the resources is split between the two units involved, in line with the proportion of future economic benefits each unit appropriates. See chapter 27 on Contracts, leases, licenses and permits for more information.

4.96 In the case of multinational enterprise (MNE) groups, the economic ownership of intellectual property products may be difficult to determine. Various arrangements, including the routing via special purpose entities, exist. The use of a special decision tree is recommended for the appropriate allocation and recording of these assets across the MNE group. See chapter 23 on Globalization for more information.

4.97 The economic benefits inherent in financial assets and liabilities are seldom transferred from a legal owner to an economic owner in exactly the same state. They are usually transformed to new forms of financial assets and liabilities by the intermediation of a financial institution that assumes some of the risk and benefits while passing the balance on to other units.

3. The definition of an asset

4.98 Leading on from the above it is possible to define an asset as follows. ***An asset is a store of value representing an economic benefit or series of economic benefits accruing to the economic owner by holding or using the item over a period of time. It is a means of carrying forward value from one accounting period to another***.

4.99 All assets in the integrated framework of the SNA are economic assets. Attributes such as skills, which are sometimes described in common parlance as an asset, are not recognized as such in the integrated framework because they do not meet the criteria of an asset, as defined in the above paragraph.

4. Types of assets and liabilities

4.100 A particularly important mechanism in the economy is the device whereby one economic unit exchanges a particular set of economic benefits with another economic unit. Economic benefits are exchanged by means of payments. From this a financial claim, and hence a liability, can be defined. There are no non-financial liabilities recognized in the integrated framework of the SNA, thus the term liability necessarily refers to a liability that is financial in nature.

4.101 ***Liabilities are defined as obligations where one unit (the debtor) is obliged, under specific circumstances, to provide funds or other economic resources to another unit (the creditor). These include shares and other equity in corporations.*** The most common circumstance in which a liability is established is a legally binding contract that specifies the terms and conditions of the payment(s) to be made and payment according to the contract is unconditional.

4.102 In addition, a liability may be established not by contract but by long and well-recognized custom that is not easily refuted. In these cases, the creditor has a valid expectation of payment, despite the lack of a legally binding contract. Such liabilities are called constructive liabilities. An example relates to pensions provided by government as part of a social security scheme. In the context of the SNA sequence of economic accounts, they are generally not recognized as being part of liabilities. Specific guidance on the recognition and the recording of pension entitlements and various types of insurance technical reserves is provided in chapter 12 on Financial accounts and chapter 24 on Insurance and pensions.

4.103 Whenever a liability exists, there is a corresponding financial claim that the creditor has against the debtor. ***Financial claims are financial instruments that give rise to an economic asset that has a counterpart liability, including shares and other equity in corporations.*** As such, a financial claim gives rise to the payment or series of payments due to the creditor by the debtor under the terms of a liability. Like the liabilities, the claims are unconditional. In addition, a financial claim may exist that entitles the creditor to demand payment from the debtor but whereas the payment by the debtor is unconditional if demanded, the demand itself is discretionary on the part of the creditor. Shares are also treated as financial claims even though the claim their holders have on the corporation is not a fixed or predetermined monetary amount.

4.104 ***Financial assets consist of all financial claims and gold bullion held by monetary authorities as a reserve asset***. Gold bullion held by monetary authorities as a reserve asset is treated as a financial asset (see chapter 6 of *BPM7* for the definition of reserve assets), even though the holders have no claim over other designated units.

4.105 All items that meet the definition of an asset given above are included in the asset boundary of the integrated framework of the SNA. Assets that are not financial assets are non-financial assets. In the case of non-financial assets, a distinction can be made between those that are produced and those that are non-produced. In the balance sheet classification used in the sequence of economic accounts, a similar distinction has been applied, although natural resources, both produced and non-produced, have been grouped together to emphasize the special character of this group of non-financial assets.

5. The asset boundary

4.106 Because assets represent a store of future economic benefits, all assets can be represented by a monetary value. This value represents the market's view of the total economic benefits embodied by the asset. Where a direct market view of this value is not available, it must be approximated by other means. There is a discussion of this topic in the annex to this chapter.

4.107 The only non-financial assets included in the asset boundary of an economy are those whose economic owners are resident in the economy. However, in the case of most natural resources and immobile fixed capital, which physically cannot leave the economy, a notional resident unit is established if the economic owner is actually a non-resident unit. In this way the assets in question do become those with resident economic owners and so are included within the asset boundary and are included on the balance sheet of the domestic economy. Portable non-financial assets that are physically located in an economy but are owned by non-residents are excluded from the balance sheet of the domestic economy; those that are physically located in the rest of the world but owned by residents are included in the asset boundary. For example, planes belonging to a domestic airline are always assets of the domestic economy regardless of where in the world they happen to be. As noted in paragraph 4.96, the ownership of intellectual property products, especially within multinational enterprise (MNE) groups, may be difficult to determine; more guidance is provided in chapter 23 on Globalization.

Contingent liabilities and provisions

4.108 A liability, as defined in paragraph 4.101 above, is unconditional once the contract establishing the liability is agreed by both parties. If the liability is established not by a legal contract but by long and well-established custom, it is referred to as a constructive liability. Some liabilities may involve a legal contract but specify that one party is obliged to provide a payment or series of payments to another unit only if certain specified conditions prevail. Such liabilities are called contingent liabilities. In general, the sequence of economic accounts includes (legal) liabilities but not constructive and contingent liabilities. An exception is made for standardized guarantees where, although each individual arrangement involves a contingent liability, the number of similar guarantees is such that an actual liability is established for the proportion of guarantees likely to be called. Another exception, albeit implicitly, is the recognition of obligations (as negative asset positions) in the case of valuing equity of limited liability shareholders in the presence of implicit guarantees or significant reputational risk; see paragraphs 14.86 to 14.89.

4.109 A corporation may set aside funds to cover, for example, unexpected events, default by their customers, or

terminal costs related to the disposal of an asset. Such monies may be described as provisions. These are not treated as liabilities in the SNA sequence of economic accounts, because they are not the subject of the sort of (legal) contract associated with a liability. Though financial institutions may regularly write off bad debts, for example, it would not be appropriate to regard the provisions set aside for this as assets of the borrowers. Even though they may be earmarked for specific purposes, the amounts designated as provisions remain part of the net worth of the corporation. Provisions are thus a designation of the purpose for which funds may be used rather than a category of financial assets and liabilities in and of themselves. More information on the treatment of provisions is provided in chapter 14 on Balance sheet.

6. Entry and exit of assets from the balance sheet

4.110 All assets owned by (notional) resident units appear on the balance sheet of the domestic economy. The first level of classification of assets distinguishes four types of assets: produced non-financial assets (excluding produced natural resources); non-produced non-financial assets (excluding non-produced natural resources); natural resources, and financial assets (and liabilities). In view of arriving at an improved accounting for the role of the environment in economic developments, natural resources are separately identified, grouping together both produced and non-produced natural resources. For the other assets, the breakdown makes clear the difference in the process by which assets enter and leave the balance sheet.

4.111 Produced non-financial assets come into being via the production process or as imports. The same holds for produced natural resources, such as cultivated biological resources yielding repeat products. Two exceptions exist. Historical monuments are included as produced assets even though they may have been constructed long before economic accounts existed. Occasionally a monument may be newly recognized as having value and thus enter the asset boundary as a produced asset other than through a current production process. Similar arguments apply to artefacts treated as valuables. Produced non-financial assets leave the asset boundary by being exhausted or by being sold to resident units that will not continue to use the asset in production as a source of future economic benefits or by being sold to non-resident units.

4.112 Non-produced non-financial assets, excluding non-produced natural resources, are of three types; contracts, leases and licences; crypto assets without a corresponding liability designed to act as a medium of exchange; and purchased goodwill and marketing assets. Contracts, leases and licences may represent an asset to the holder when the agreement restricts the general use or supply of products covered by the agreement and thus enhances the economic benefits accruing to the party to the agreement beyond what would accrue in the case of unrestricted supply. These assets come into existence when the agreement is made and the enhanced economic benefits become apparent. They leave the balance sheet when the conditions restricting access are lifted or when there is no longer an economic benefit to be earned from having restricted access to the asset. Crypto assets without a corresponding liability designed to act as a medium of exchange come into circulation via the work of miners that use software to solve cryptographic puzzles (proof-of-work) and validate transactions on the blockchain. They may also be released via an explicit sale and/or as payment to validators that validate transactions in different ways than via proof-of-work (e.g., via proof of stake or proof of authority). However, these crypto assets are considered as non-produced assets, because the miners or validators, who may (partly) receive crypto assets in return, are considered to be producers of validation services, not as producers of the assets themselves. Goodwill and marketing assets are only recognized as assets in the integrated framework of the SNA when they are evidenced by a sale.

4.113 Financial assets and liabilities come into being when a commitment is made by one unit to make a payment to another unit. They cease to exist when there is no longer a commitment for one unit to make payments to the other. This may be because the term of the agreement specified in the commitment has expired or for other reasons.

7. Exclusions from the asset boundary

4.114 The coverage of assets in the integrated framework of national accounts is limited to those assets used in economic activity and that are subject to ownership rights, either individually or collectively; thus for example, natural resources that are not owned and controlled, are excluded.

4.115 Consumer durables are not regarded as assets in the integrated framework of national accounts, because the services they provide are not within the production boundary. Because the information on the stock of durables is of analytical interest, though, it is suggested that this information appear as a supplementary item in the balance sheet but not be integrated into the totals of the table.

4.116 Human capital is also not treated by the as an asset in the integrated framework of national accounts; see paragraphs 1.76 and 1.77. However, as explained in chapter 35 on Measuring the sustainability of well-being, it is encouraged to compile extended accounts on education and training, including experimental estimates of the value of human capital.

4.117 Some environmental resources are excluded from the asset boundary in the integrated framework of national accounts. These are usually of the same type as those within the boundary but are of no economic value. Furthermore, ecosystem assets, as defined in *SEEA Ecosystem Accounting*, are also not included in the asset boundary of the integrated framework of national accounts.

D. Balancing items

4.118 ***A balancing item is an accounting construct obtained residually as the difference between the total value of the entries on one side of an account(credits, revenues or changes in liabilities) and the total value of the entries on the other side (debits, expenditures or changes in assets). It cannot be measured independently of the entries in the account.*** It does not relate to any specific set of transactions, or any set of assets, and so it cannot be expressed in terms of its own price or quantity units.

Balancing items in the flow accounts

4.119 Balancing items are not simply devices introduced to ensure that accounts balance. They are often used as key macroeconomic indicators to assess economic performance. They encapsulate a great deal of information and include some of the most important entries in the accounts, as can be seen by the examples of balancing items in the sequence of economic accounts for the accounts containing flows reproduced below:

- Value added or domestic product;
- Operating surplus;
- Disposable income;
- Saving;
- Net lending / net borrowing.

Balancing items in the balance sheets

4.120 ***Net worth (B90), which is defined as the value of an institutional unit's assets less the value of its outstanding liabilities (including shares and other equity)***, is the balancing item in the balance sheets. As is true for other balancing items in the SNA sequence of economic accounts, net worth cannot be measured independently of the other entries, nor does it relate to any specific set of, in this case, levels of stocks.

4.121 As well as net worth appearing as a stock level, changes in net worth due to different sorts of transactions and other flows may also be derived. Just as the changes in the levels of any asset can be traced through changes in transactions and other flows throughout the period, so changes in total net worth can be exhaustively described according to the transactions and other flows that led to changes in the total level of assets and liabilities.

E. Accounting rules

4.122 This section covers the quadruple entry accounting principle, valuation, time of recording, classification of

accounting entries and grouping of transactions. The application of each of these to the individual flows and stocks is explained in detail in the chapters that describe the entries in the various tables and accounts of the sequence of economic accounts. The details on classifications of accounting entries are discussed, account by account, in chapters 7 to 14.

1. Quadruple-entry accounting

4.123 The accounting system underlying the sequence of economic accounts of the SNA derives from broad bookkeeping principles. To understand the accounting system for the sequence of economic accounts, three bookkeeping principles can be distinguished:

1. Vertical double-entry bookkeeping, also known as simply double-entry bookkeeping used in business accounting,
2. Horizontal double-entry bookkeeping, and
3. Quadruple-entry bookkeeping.

Vertical double-entry bookkeeping – corresponding entries

4.124 The main characteristic of vertical double-entry bookkeeping is that each transaction leads to at least two entries, traditionally referred to as a credit entry and a debit entry, in the books of the transactor. This principle ensures that the total of all credit entries and that of all debit entries for all transactions are equal, thus permitting a check on consistency of accounts for a single unit. Each transaction requires two entries.

4.125 Other flows have their counterpart entries directly in changes in net worth. As a result, vertical double-entry bookkeeping ensures the fundamental identity of a unit's balance sheet, that is, the total value of assets equals the total value of liabilities plus net worth. The total value of the assets owned by a unit minus the total value of liabilities provides net worth.

Horizontal double-entry bookkeeping – counterpart entries

4.126 The concept of horizontal double-entry bookkeeping is useful for compiling accounts that reflect the mutual economic relationships between different institutional units in a consistent way. It implies that if unit A provides something to unit B, the accounts of both A and B show the transaction for the same amount: as a payment in A's account and as a receipt in B's account. Horizontal double-entry bookkeeping ensures the consistency of recording for each transaction category by counterparties. For example, dividends payable throughout the economy should be equal to dividends receivable throughout the economy once transactions with the rest of the world are taken into account. While the horizontal double entry applies to the national accounts of a particular country, similar principles apply to external accounts at a worldwide level: for example, at the worldwide level, dividends payable by all economies should be equal to dividends receivable by all economies.

Quadruple-entry bookkeeping

4.127 The simultaneous application of both the vertical and horizontal double-entry bookkeeping results in a quadruple-entry bookkeeping, which is the accounting system underlying the recording in the sequence of economic accounts in the national accounts. The quadruple-entry system deals in a coherent way with multiple transactors or groups of transactors, each of which satisfies vertical double-entry bookkeeping requirements. A single transaction between two counterparties thus gives rise to four entries. In contrast to business bookkeeping, the sequence of economic accounts in national accounts deal with interactions among a multitude of units in parallel, and thus require special care from a consistency point of view. As a liability of one unit is mirrored in a financial asset of another unit, for instance, they should be identically valued, allocated in time and classified to avoid inconsistencies in aggregating balance sheets of units (by sectors or for the total economy in the case of national accounts, or regional or global totals in the case of external

accounts). The same is also true for all transactions and other flows that affect balance sheets of two counterparties.

Types of accounting entries

4.128 The sequence of economic accounts of the SNA uses the following conventions and terminologies for recording flows with the rest of the world. Imports, for instance, are a revenue of the rest of the world used in the domestic economy and payments for imports represent a drawdown of wealth for the domestic economy but a revenue for the rest of the world. By treating the rest of the world account as a pseudo-sector, the quadruple entry accounting principle can be applied and all stocks and flows within the economy and with the rest of the world are completely balanced. The external accounts show the consolidated accounts of all domestic sectors relative to the rest of the world. It is thus an exact mirror image of the accounts for the rest of the world within the SNA. However, despite the reversal of the sides of the accounts on which items are shown, there is equality in coverage, measurement and classification between the two systems.

4.129 More generally, in the sequence of economic accounts, credit entries in the accounts representing current transactions are denoted as revenues, while debit entries are referred to as expenditures. In the case of transactions in assets and liabilities, including capital transfers, reference is made to changes in assets and changes in liabilities (and changes in net worth). The same holds for the accounts which reflect flows affecting the level of assets and liabilities other than transactions. The two sides of balance sheets are referred to as assets, and liabilities and net worth, respectively.

2. Valuation

General rules

4.130 The power of the integrated framework of the SNA as analytical tools stem largely from their ability to link numerous, very varied economic phenomena by expressing them in a single accounting unit. The integrated framework of the SNA do not attempt to determine the utility of the flows and stocks that come within their scope. Rather, they measure the current exchange value of the entries in the accounts in monetary terms.

4.131 In line with the above, the current exchange value, often labelled as the "market price", refers to the value at which goods, services, labour or assets are exchanged, or else could be exchanged, for cash (currency or transferable deposits). Exchange prices are the basis for valuation of transactions in the integrated framework of the SNA. This section describes the general principles for valuation of flows and positions.

Valuation of transactions

4.132 Exchange prices for transactions are defined as amounts of money that willing buyers pay to acquire something from willing sellers; the exchanges are made between independent parties and on the basis of commercial considerations only, sometimes called "at arm's length". Thus, according to this strict definition, an exchange price refers only to the price for one specific exchange under the stated conditions. A second exchange of an identical unit, even under circumstances that are almost exactly the same, could result in a different exchange price. A exchange price defined in this way is to be clearly distinguished from a price quoted in the market, a world market price, a going price, a fair market price, or any price that is intended to express the generality of prices for a class of supposedly identical exchanges rather than a price actually applying to a specific exchange. Furthermore, an exchange price should not necessarily be construed as equivalent to a free market price; that is, a market transaction should not be interpreted as occurring exclusively in a purely competitive market situation. In fact, a market transaction could take place in a monopolistic, monopsonistic, or any other market structure. Indeed, the market may be so narrow that it consists of the sole transaction of its kind between independent parties.

4.133 When a price is agreed by both parties in advance of a transaction taking place, this agreed, or contractual, price is the exchange price for that transaction regardless of the prices that prevail when the transaction takes place.

4.134 The observed market transactions in most cases will represent exchange values as described in the preceding paragraph. Paragraphs 4.147 to 4.150 describe cases where actual exchange values may not represent market prices or exchange prices at arm's length. Transactions that involve dumping and discounting represent exchange prices. Transaction prices for goods and services are inclusive of appropriate taxes and subsidies. An exchange price is the price payable by the buyer after taking into account any rebates, refunds, adjustments, etc. from the seller.

4.135 Transactions in financial assets and liabilities are recorded at the prices at which they are acquired or disposed of. Transactions in financial assets and liabilities should be recorded exclusive of any commissions, fees, and taxes whether charged explicitly, included in the purchaser's price, or deducted from the seller's proceeds. This is because both debtors and creditors should record the same amount for the same financial instrument. The commissions, fees, and taxes should be recorded separately from the transaction in the financial asset and liability, under appropriate categories. The valuation of financial instruments, which excludes commission charges (to be recorded as transactions in services), differs from the valuation of non-financial assets, which includes any costs of ownership transfer.

4.136 When exchange prices for transactions are not observable, valuation according to market price equivalents provides an approximation to exchange prices. In such cases, exchange prices of the same or similar items when such prices exist will provide a good basis for applying the principle of exchange prices. Generally, exchange prices should be taken from the markets where the same or similar items are traded currently in sufficient numbers and in similar circumstances. If there is no appropriate market in which a particular good or service is currently traded, the valuation of a transaction involving that good or service may be derived from the exchange prices of similar goods and services by making adjustments for quality and other differences.

4.137 If there is no appropriate market from which the value of a particular item can be taken by analogy, its valuation may be derived from prices that are established in less closely related markets. Ultimately, some goods and services can only be valued by the amount that it would cost to produce them currently. Output valued in this way should include a mark-up that reflects the net return to capital used in the production of the relevant goods and services.

4.138 More details on the methods for valuing transactions are provided in the annex to this chapter, while the valuation of specific types of flows is discussed in further detail in relevant chapters.

Agricultural products sold from the farm

4.139 A significant qualification to the use of market-equivalent prices is necessary in the case of agricultural products sold directly from the farm. The so-called farm-gate price may be significantly lower than a price in the nearest market where prices can be observed since the latter include the costs of bringing the goods to market. Further, if only a small fraction of a crop gets to the market, it may command a higher price than would be the case if all the available crop were traded. Such considerations are to be understood by the qualification that observed market prices are appropriate only when similar products are traded in sufficient number and in similar circumstances. When these conditions do not hold, adjustments must be made to the observed prices.

Barter transactions

4.140 The case of barter transactions requires specific consideration. The products bartered must be valued when produced as well as when acquired for consumption or for capital formation. While it may often be the case that for small scale barter transactions entered into by the producer, there are no taxes on products payable (or if they are nominally payable the conditions of the barter means they are avoided and not paid), there is no automatic exclusion of bartered products from liability to taxes on products. Subsidies on bartered products are possible conceptually but unlikely to be significant. By the nature of barter, there are no wholesale or retail margins applicable to bartered products. Goods subject to barter may, however, have associated transportation costs. If the unit providing the goods for barter also provides the transport, this will, in general, mean that the barter "package" includes some transportation services and the value to the recipient

will be a purchaser's price including this transportation cost. If the unit receiving the goods must provide the transport, this may reduce the valuation of the goods to the recipient.

4.141 Barter transactions may concern new or existing goods acquired by one party to the barter in which case the value to that party will be the cost of acquisition (in the case of new goods) or the realizable value in the case of existing goods.

4.142 Barter transactions necessarily involve two units and (at least) two products. Each unit may place a different value on either item being bartered. In such a case, since the accounting rules of the integrated framework of the SNA require a single value to be recorded for both parties, on pragmatic grounds a simple average of the different valuations (after allowing for any taxes and transportation costs) may be taken as the value of the transaction.

4.143 Barter transactions do not always take place simultaneously. When this is not the case, an account receivable/payable should be recorded even though neither part of the barter transaction takes place in monetary terms.

Quotation prices

4.144 Market valuation also poses problems for transactions in goods in which the contracts establish a quotation period often months after the goods have changed hands. In such cases, the exchange value at the time of change of ownership should be estimated. The estimate should be revised with the observed exchange value, when known. The exchange value is given by the contract price even if it is unknown at the time of change of ownership.

Valuation of transfers in kind

4.145 When non-financial resources are provided without a quid pro quo, such resources should be valued at the prices that would have been received if the resources had been sold in the market. In the absence of an observable market price, the donor's view of the imputed value of the transaction will often be quite different from that of the recipient. The suggested rule of thumb is to use the value assigned by the donor as a basis for recording.

Acquisition of goods under financial lease

4.146 Acquisition of goods under financial lease should be valued at exchange prices at the time of acquisition, if such prices are available. When no price is determined, it may be necessary to use the estimated written-down current acquisition values of fixed assets or the present value of expected future economic benefits.

Transfer pricing

4.147 In some cases observed exchange values may not represent market prices. Examples are transactions involving distorted transfer prices between affiliated enterprises, manipulative agreements with third parties, and certain non-commercial transactions, including concessional interest (that is, interest payable at a reduced rate as a matter of policy). Prices may be under- or over-invoiced, in which case an assessment of a market equivalent price needs to be made. Although adjustment should be made when the observed exchange values do not represent market prices, this may not be practical in many cases. Adjusting the actual exchange values to reflect market prices will have consequences in other accounts. Therefore, when such adjustments are made, corresponding adjustments in other accounts should also be made, for example, if prices of goods are adjusted, associated income account or financial account transactions or both should also be adjusted. Moreover, the adjustments need to be made consistently in the accounts of both units involved in the transaction. This may be difficult to apply in practice in the case the relevant units are resident in different countries, and the statistical offices responsible for making the adjustments represent different countries as well.

4.148 Values put on an invoice may deviate systematically or to such a large extent from the prices paid in the market for similar items that it must be presumed that the sums paid cover more than the specified transactions. An example is so-called transfer pricing: affiliated enterprises may set the prices of the transactions among themselves artificially high or low in order to effect an unspecified income payment or capital transfer. Such transactions should preferably be made explicit if their value is considerable and would hinder a proper interpretation of the accounts. In some cases, transfer pricing may be motivated by income distribution or equity build-ups or withdrawals. Replacing book values (transfer prices) with market value equivalents is desirable in principle, when the distortions are large and when availability of data (such as adjustments by customs or tax officials or from partner economies) makes it feasible to do so. Selection of the best market value equivalents to replace book values is an exercise calling for cautious and informed judgment.

4.149 The exchange of goods between affiliated enterprises may often be one that does not occur between independent parties (for example, specialized components that are usable only when incorporated in a finished product). Similarly, the exchange of services, such as management services and technical know-how, may have no near equivalents in the types of transactions in services that usually take place between independent parties. Thus, for transactions between affiliated parties, the determination of values comparable to market values may be difficult, and compilers may have no choice other than to accept valuations based on explicit costs incurred in production or any other values assigned by the enterprise.

4.150 All in all, because of all the complexities involved to arrive at a consistent recording of the adjustments, not to mention the availability of relevant information on the distortions in the observed exchange values, national accounts and external accounts often refrain from trying to approximate true market prices. Here, one can also add that the observed exchange values, which may be motivated by global tax avoidance or other reasons, also represent an economic reality of its own, albeit not one which is based on market prices and other commercial considerations.

Concessional pricing

4.151 While some non-commercial transactions, such as a grant in kind, have no exchange price, other non-commercial transactions may take place at implied prices that include some element of grant or concession so that those prices also are not market prices. Examples of such transactions could include negotiated exchanges of goods between governments and government loans bearing lower interest rates than those with similar grace and repayment periods or other terms for purely commercial loans. Concessional lending by governments is described in chapter 30 on General government and the public sector. Other examples of concessional lending may relate to the provision of loans at reduced interest rates by employers to their employees. In the sequence of economic accounts of national accounts, adjustments for concessional lending are restricted to the latter; the provision of adjusted information on concessional lending in a non-market context by governments, central banks and international organizations is encouraged as supplementary items. See paragraphs 14.112 and 14.113 for further guidance on the treatment and recording of concessional loans.

4.152 Transactions by general government bodies and private non-profit units not engaged in purely commercial undertakings are often subject to non-commercial considerations. However, transfers involving provision of goods and services may also be provided or received by other sectors of the economy.

Valuation of assets and liabilities

4.153 As a general principle, stocks of assets and liabilities should be valued as if they were being acquired on the date to which the balance sheet relates. This implies that when they are exchanged on a market, assets and liabilities are to be valued using a set of prices that are current on the date to which the balance sheet relates and that refer to specific assets.

4.154 It is important though to make a clear distinction between the initial recognition of assets, and the subsequent valuation of assets. Regarding the initial recognition, i.e., the time at which the asset (or liability) enters the balance sheet, the valuation principles for valuing transactions are relevant. When it comes to the subsequent valuation, it is often not possible to use a set of prices that are current on the date to which the balance sheet

relates, because there are no active markets in which the relevant assets are traded. This is not only true for most non-financial assets, certainly when taking into account the second-hand nature and the partial depreciation of these assets, but also for various financial instruments. As a consequence of the unavailability of observable market or near-market prices, alternative valuation methods need to be applied to arrive at an appropriate valuation.

4.155 For valuing produced non-financial assets, two basic approaches can be distinguished, the first one based on the exchange prices for similar (second-hand) assets, and the second one based on the contribution of capital services, including depreciation, to the production process in the remaining service life of the asset. The latter approach is usually approximated by estimating the written-down replacement cost, adequately adjusted for changes in prices. To compile these estimates, the perpetual inventory method (PIM) is applied, which – if applied properly – replicates the present value of future capital services derived from the asset in question. This method is described further in chapter 17 on Capital services.

4.156 In the case of produced non-financial assets for which active second-hand markets exist, such as for generic transport equipment and dwellings, it can be assumed that the value derived from the capital services approach will closely follow the observable market prices of the relevant second-hand assets, as the economic agents can make an explicit choice between investing in new assets, or purchasing second-hand assets. However, most non-financial assets used in production are not generic, but specifically designed and constructed for a certain production activity. Moreover, the markets for these second-hand assets may be extremely thin. Transfer and other costs related to, for example, dismantling, transportation and renewed installation, may also be substantial, As a consequence, the observable market prices for these second-hand assets may be close to their scrap value, thus not providing a good representation of the capital services that can be derived from them in the remainder of the service life, the latter representing the value of the asset in an enterprise as a going concern. One could also argue that the second-hand assets in these types of markets are not the same as the assets used in production, thus not being a good representation of the assets being valued.

4.157 Similar valuation issues may exist in the case of, for example, non-produced natural resources, the stocks of which are generally not traded in the market, so any values derived from occasionally traded stocks cannot be used for the valuation of similar assets because of the heterogeneity of the resources in question. In these cases, the value on the balance sheet can be approximated by the present value of future economic benefits derived from these resources, using the residual value method, i.e., the output generated with the exploitation of the resources minus all costs associated with the exploitation. Exploitation rights are often provided by government for a series of rent payments. The (present value of) actual rent payments may not account for the full value of resource rents that can be derived from these assets, and the asset in question may clearly generate a future stream of resource rents that goes well beyond the payments of rent to the legal owner. The unit having the rights to exploit the resources thus appropriates part of the resource rents, reflecting the future capital services derived from these assets by the unit having the exploitation rights. In these cases, the value of the resources in question is split between the legal owner, usually government, and the unit exploiting the resources. See also paragraphs 27.55 to 27.62.

4.158 Finally, when it comes to applying the method of the present value of future economic benefits, it is important to acknowledge that it may be difficult to determine the future economic benefits with the appropriate degree of certainty. Assumptions also need to be made about the asset's life length and the discount factor to be applied. Therefore, the other possible sources of valuation described in the preceding paragraphs should be exhausted before resorting to this method. It should be noted, however, that the method as such is theoretically sound as can often be verified for a number of financial assets. Further, if this method is used, some sensitivity testing of the assumptions made may be appropriate. In fact, the method most commonly used to derive estimates of depreciation and the capital stock of fixed assets associates a stream of future economic benefits with the decline in value of a fixed asset in use in production.

4.159 Many financial assets are traded in markets on a regular basis and therefore can be valued by directly using the price quotations from these markets. If the financial markets are closed on the balance sheet date, the market prices that should be used in the valuation are those that prevailed on the closest preceding date when the markets were open. Debt securities have a current market value as well as a nominal value, and it is recommended to compile supplementary data on the nominal values of positions of debt securities as well. (See paragraph 4A.26 for the definition of nominal value.)

4.160 Valuation according to market value equivalents is needed for valuing financial assets and liabilities that are not traded in financial markets or are traded only infrequently. For these assets and liabilities, it will be necessary to estimate fair values that, in effect, approximate market prices. The present value of future cash flows can also be used as an approximation to market prices, provided an appropriate discount rate can be used.

4.161 For most non-negotiable financial assets, particularly those with a face value applicable at some point in the future (e.g., loans, deposits, and other accounts receivable/payable), the present market value can be established as the face value discounted to the present by the market interest rate. In principle, therefore, if a reasonably robust estimate of the stream of future earnings to come from an asset can be made, along with a suitable discount rate, this allows an estimate of the present value of future economic benefits to be established. However, another principle for valuing stocks is the need for consistency in the valuation of debtor and creditor positions for financial instruments. This is one of the pragmatic reasons to apply nominal values for financial instruments, such as deposits and loans, which are non-negotiable and not (actively) traded on the market. Moreover, conceptually, the nominal value of a debt instrument can also be calculated by discounting future interest and principal payments at the existing contractual interest rate(s) on the instrument; these interest rates may be fixed rate or variable rate. However, some would argue that such a valuation is somewhat inconsistent with a valuation at fair value of the relevant asset positions, while others would argue that nominal values, reflecting the actual payments of principal to be made in the future, including interest accrued to date, can be considered as a good approximation of the fair value. Nominal value is also considered useful because it shows the actual legal liability and the starting point of creditor recovery behaviour. It is recognized, however, that nominal value provides an incomplete view of the financial position, particularly when the loans are non-performing. Therefore, information on the nominal value of non-performing loans should be included as a supplementary item; see paragraph 14.77 to 14.79. Loans that have become negotiable de facto should be reclassified under debt securities; see paragraph 12.71.

4.162 Positions on deposits and other accounts receivable/payable are also recorded at nominal value. They give rise to the same issues of nominal and fair values as loans. Deposits at banks and other deposit-taking corporations in liquidation should also be recorded at their nominal value until they are written off. If significant, however, such deposits should be shown separately as a supplementary item. The same treatment is applicable for any other cases of impaired deposits (i.e., where the deposit-taking corporation is not in liquidation but faces liquidity issues).

4.163 When securities are quoted on markets with a buy-sell spread, the midpoint should be used to value the instrument. The spread is an implicit service of the dealer, paid by buyers and sellers (see paragraphs 7.190 to 7.194. Similarly, positions in financial assets and liabilities denominated in foreign currency should be valued using the midpoint at close of business between the buying and selling rates on the reference date.

4.164 For a restricted group of financial instruments, the above valuation methods cannot be applied. Examples relate to unlisted equity and defined benefit pension entitlements. While for the latter the present value of future pension benefits is the generally accepted method for valuation, various approaches can be considered in the case of unlisted equity; see paragraphs 14.81 to 14.89.

4.165 More details on the methods for valuing assets are provided in the annex to this chapter, while the valuation of specific types of assets is discussed in further detail in chapter 14 on Balance sheet.

4.166 In conformity with the general rule, provision of assets, services, labour or capital in exchange for foreign cash, or crypto assets, is recorded at the actual exchange value agreed upon by the two parties to the transaction. Flows and stocks concerning foreign currency and crypto assets are converted to their value in national currency at the rate prevailing at the moment they are entered in the accounts, that is, the moment the transaction or other flow takes place, or at the moment to which the balance sheet applies. The midpoint between the buying and selling rate should be used so that any service charge is excluded.

Business accounting valuation

4.167 Business accounts, tax returns, supervisory data, and other administrative records are main sources of data for drawing up macroeconomic statistics. One should be aware, however, that none of these necessarily

satisfies the valuation requirements of macroeconomic statistics and that accordingly adjustments may have to be made. In particular, in the interest of prudence, business accounting often adopts valuations that are not appropriate for the macroeconomic statistics. Similarly, valuations for tax purposes often serve objectives that differ from those of macroeconomic analysis. For example, the depreciation methods favoured in business accounting and those prescribed by tax authorities almost invariably deviate from the concept of depreciation employed in the integrated framework of the SNA, particularly with their use of historical cost. (Further details on the commonalities and differences between the recording in macroeconomic statistics, particularly focusing on national accounts, and the recording in business accounting and public sector accounting are provided in chapter 28 on Non-financial corporations and chapter 30 on General government and the public sector.)

4.168 More generally, one can observe that the valuation of (financial) assets and liabilities in data reported by enterprises or other respondents, which are primarily based on commercial, supervisory, tax, or other accounting standards, do not fully reflect the current exchange prices of the assets and liabilities. In such cases, the data should be adjusted to reflect, as closely as possible, the value of the (financial) assets and liabilities recommended in the integrated framework of the SNA.

Valuation of partitioned flows

4.169 Where a single payment refers to more than one transaction category (as they are defined in the macroeconomic statistics), the individual flows need to be recorded separately. In such a case, the total value of the individual transactions after partitioning must equal the observed exchange value that actually occurred. For example, actual exchange values involving foreign currency include commission for currency conversion. The portion related to currency conversion should be recorded separately as transactions in services. As another example, the integrated framework of the SNA recommends dividing interest transactions with financial corporations between two transaction categories, one showing interest as understood in the integrated framework (SNA interest) and the other representing the implicit payment for financial intermediation services.

4.170 Partitioning is not limited to transactions; an example is real holding gains, which are separated for analytical reasons from neutral holding gains that are simply proportionate to changes in the general price level.

4.171 A less obvious mingling of transactions occurs when the provision of an item and the related monetary payment or payments do not take place simultaneously. When the time gap becomes unusually long and the amount of trade credit extended is very large, the conclusion may be that implicitly an interest fee has been charged. This recording of interest becomes even more relevant in periods of high inflation and/or interest. In all these cases, the actual payment or payments should be adjusted for accrued interest in order to arrive at the correct value of the item transferred. Such adjustments are generally not recommended for normal trade credit.

Valuation of rerouted transactions

4.172 Values of rerouted transactions will have to be derived from values of other observed transactions to which they are related. For example, values of transactions in reinvested earnings are derived from the direct investors' shares (in terms of the equity held) of distributable income, less amounts declared for dividend distribution to the foreign direct investor, or less the withdrawals from income of the quasi-corporation by the foreign direct investor. For more details, see paragraphs 8.143 to 8.146.

Special valuations concerning products

4.173 Usually, the producer and the user of a given product perceive its value differently owing to the existence of taxes and subsidies on products, transport costs to be paid and the occurrence of distribution margins. In order to keep as close as possible to the views of the economic transactors themselves, the integrated framework of the SNA records all uses at purchasers' prices including these elements, but excludes them from the value of output of the product.

4.174 Output of products is recorded at basic prices. ***The basic price is defined as the amount receivable by the producer from the purchaser for a unit of good or service produced as output minus any tax payable, and plus any subsidy receivable, on the product as a consequence of its production or sale. It excludes any transport charges invoiced separately by the producer.*** If it proves impossible to obtain the required information at basic prices, output may be valued at producers' prices. ***The producer's price is defined as the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any value added tax (VAT), or similar deductible tax, invoiced to the purchaser. It excludes any transport charges invoiced separately by the producer.***

4.175 Use of products is recorded at purchasers' prices. ***The purchaser's price is defined as the amount payable by the purchaser, excluding any deductible VAT or similar deductible tax, in order to take delivery of a unit of a good or service at the time and place required by the purchaser. This price includes any transport charges paid separately by the purchaser to take delivery at the required time and place.***

4.176 The difference in value recorded for a product between when it is produced and the moment it is used for, say, final consumption expenditure can be considerable. Components of this difference may be:

a. Taxes, less subsidies, on products payable by the producer;

b. Distribution and transport margins, including taxes, less subsidies, on products payable by wholesale and retail traders;

c. Transport, including taxes, less subsidies, on products, paid separately by the consumer;

d. Predictable quality increases producing additional output volume less current losses during storage;

e. Holding gains while the product is with the producer and with wholesale and retail traders.

As one can see from the above, the difference between the original basic price and ultimate purchasers' price of a particular good encompasses both pure price and pure volume elements. In practice, of course, the estimates do not keep track of individual products but are made at a more global level for groups of products.

4.177 Imports and exports of goods are recorded in the integrated framework of the SNA at border values. Total imports and exports of goods are valued free-on-board (FOB, that is, at the exporter's customs frontier). As it may not be possible to obtain FOB values for detailed product breakdowns, the tables containing details on international trade show imports of goods valued at the importer's customs frontier (CIF, that is, cost, insurance and freight), supplemented with global adjustments to FOB values. CIF values include the insurance and freight charges incurred between the exporter's frontier and that of the importer. The value on the commercial invoice may of course differ from both of these.

4.178 As the overall balance of imports and exports must conform to actual circumstances, border valuation of goods has consequences for the recording of freight and insurance in the integrated framework of the SNA. Usually, the values of both imports and exports for these service items have to be adapted to compensate for the special conventions on goods traded with the rest of the world. Further details on this treatment are in chapter 15 on Supply and use tables and chapter 33 on Transactions and positions between residents and non-residents.

4.179 In relation to the valuation of exports and imports, it is generally acknowledged that a valuation at the observed exchange values, which is closely aligned to the invoice values, is the conceptually preferred method. Subject to further testing of the implementation in practice, it is intended to be introduced as the basic principle for valuing imports and exports in the next versions of integrated framework of the SNA.

Valuation of other flows

Other changes in the volumes of assets and liabilities

4.180 In order to determine the valuation of the other changes in the volume of assets and liabilities, it is usually necessary to value the asset before and after the change in volume and take the difference that is not explained by any transaction and holding gains and losses as the value of the other change in volume.

4.181 Other changes in the volume of financial assets and liabilities are recorded at the observable market prices of

similar instruments. For writing-off of financial instruments that are valued at nominal values, the value recorded in the other changes in the volume of assets and liabilities account should correspond to their nominal value prior to being written off. For all reclassifications of assets and liabilities, values of both the new and old instruments should be the same.

Holding gains and losses

4.182 Holding gains and losses accrue continuously and apply to both non-financial and financial assets and liabilities. In general, they are estimated by deducting from the total change in the value of assets those that can be attributed to transactions and to other changes in volumes.

4.183 Since most financial assets are matched by liabilities, either within the domestic economy or with the rest of the world, it is important that holding gains in one are matched by holding losses in the other and vice versa. A holding gain occurs when an asset increases in value or a liability decreases in value; a holding loss occurs when an asset decreases in value or a liability increases in value. The value of holding gains and losses during an accounting period shows the net changes of holding gains and holding losses for an asset and a liability separately. In practice, the value of holding gains and losses is calculated for each asset and liability between two points in time: the beginning of the period or when the asset or liability is acquired or incurred and the end of the period or when the asset or liability is sold or extinguished.

4.184 For loans, deposits, and other accounts receivable/payable sold at a discount, the transaction values recorded in the financial account may differ from the nominal values recorded in the balance sheets. Such differences are recorded as holding gains and losses in the other changes in financial assets and liabilities account; see also paragraph 13.116.

3. Time of recording

Choice of time of recording

4.185 When discussing timing in the SNA sequence of economic accounts, an essential distinction should be made between stock data as recorded in balance sheets, on the one hand, and flow data as recorded in the other accounts, on the other. Balance sheets, by definition, refer to specific points in time. In contrast, flows are aggregations, over some chosen accounting period, of individual transactions or other flows, which are themselves scattered over the accounting period.

4.186 Thus, the sequence of economic accounts of the SNA does not show individual transactions or other flows, but there are four reasons why precise rules on their individual timing must be given. In the first place, rules have to be formulated to say in which accounting period the discrete flows are to be recorded. Secondly, an exact timing of individual flows within the accounting period is crucial to distinguish between changes in net worth due to transactions and those due to other changes (e.g., other changes in volume and holding gains or losses). This distinction is particularly important in situations of high inflation. Thirdly, the integrated nature of the system means that the stocks recorded on the balance sheet are influenced by the timing of flows. Finally, the quadruple accounting system requires that entries for a transaction are made by the counterparties at the same time. This ensures the consistency of accounts for each party.

4.187 One of the problems in pinning down the timing of transactions is that activities of institutional units often extend over periods in which several important moments can be distinguished. For instance, many commercial sales commence with the signing of a contract between a seller and a buyer, encompass a date of delivery (dates of crossing border in the case of exports/imports) and a date or dates on which payments become due and are only completed as of the date the last payment is received by the seller. Each of these distinct moments in time is to some extent economically relevant and may result in multiple transactions in the integrated framework of national accounts.

4.188 Similarly, in analysing government expenditure one can distinguish the day that a budget is voted upon by the legislature, the day on which the ministry of finance authorizes a department to pay out specified funds, the day a particular commitment is entered into by the departments, the day deliveries take place and finally the day payment orders are issued and cheques are paid. With regard to taxes, for example, important

moments are the day or the period in which the liability arises, the moment the tax liability is definitively assessed, the day that it becomes due for payment without penalty and the day the tax is actually paid or refunds are made.

4.189 Clearly, making entries for all successive stages discernible within the activities of institutional units, although theoretically possible, would severely overburden the integrated framework of the SNA. A choice has to be made, recognizing (a) the needs of macroeconomic analysis, (b) microeconomic views, and (c) commonly available sources. Often, in this respect, a distinction is drawn between recording flows on a cash basis, due-for-payment basis, the commitment basis and accrual basis. There may be other timing bases, such as physical movement or administrative process, used in some data sources. As explained in the following paragraphs, the integrated framework of the SNA and other macroeconomic statistics recommend recording each transaction on an accrual basis.

Choice for recording on an accrual basis

4.190 Cash accounting records only cash payments and records them at the times these payments occur. This method is widely used for certain business purposes. A practical advantage is the avoidance of problems connected with valuing non-monetary flows. Yet, cash accounting cannot be used generally for economic and national and external accounting as the times at which payments take place may diverge significantly from the economic activities and transactions to which they relate and it is these underlying activities and transactions that the integrated framework of the SNA seeks to portray. Moreover, cash recording cannot be applied to the many non-monetary flows included in the integrated framework.

4.191 Due-for-payment recording shows flows that give rise to cash payments at the latest times they can be paid without incurring additional charges or penalties and, in addition to these, actual cash payments at the moments they occur. The period of time (if any) between the moment a payment becomes due and the moment it is actually made is bridged by recording a receivable or a payable in the financial accounts. Due-for-payment recording furnishes a more comprehensive description of monetary flows than does cash accounting. A disadvantage is, of course, that the recording is still limited to monetary flows.

4.192 Accrual accounting records flows at the time economic value is created, transformed, exchanged, transferred or extinguished. This means that flows that imply a change of ownership are entered when the change occurs, services are recorded when provided, output at the time products are created and intermediate consumption when materials and supplies are being used. In other words, the effects of economic events are recorded in the period in which they occur, irrespective of whether cash was received or paid or was due to be received or paid. When an economic event is accompanied by a settlement at a later date, such as a purchase of goods financed by a trade credit, the time lag is bridged by recording each event separately, with the corresponding entry at the time of the change in ownership being trade credit payable. The integrated framework of the SNA favours accrual accounting because:

a. The timing of accrual accounting is in full agreement with the way transactions, other flows, and main economic aggregates (value added, external balance on goods and services, saving and net lending/net borrowing) are defined in the sequence of economic accounts of the SNA. This agreement allows the profitability of productive activities to be evaluated correctly (that is, without the disturbing influence of leads and lags in cash flows) and a sector's net worth to be calculated correctly at any point in time;

b. Accrual accounting provides the most comprehensive information because all flows can be recorded consistently, including non-monetary transactions, imputed transactions, and other flows.

4.193 The change of economic ownership is central in determining the time of recording on an accrual basis for transactions in goods, non-financial assets and financial assets. A change in ownership from an economic point of view means that all risks, rewards, and rights and responsibilities of ownership in practice are transferred. In general, a change in legal ownership also involves a change in economic ownership. In some cases, a change of economic ownership takes place even though the legal ownership remains unchanged (e.g., financial leases and transactions between an enterprise and its foreign branches). In other cases, there is no change in economic ownership, even though there is a change in legal ownership. For example, for repurchase agreements involving the provision of securities for cash, the risks and rewards attached to the securities

remain with the original holder (as discussed in paragraph 12.80 to 12.83) and the only transaction is a loan. Similarly, in the case of securities lending without cash collateral, there is no change in ownership of the securities, although securities lending fees may arise; see paragraph 25.149.

4.194 Many transactions, such as everyday purchases of households in shops, are monetary transactions in which a product is delivered against immediate, or nearly immediate, payment in cash. In those instances there are no differences between the three methods discussed in the above. Accrual accounting is particularly relevant to the timing of various internal transactions (such as output that is added to the inventories of the producer), exchanges in which the parties deliver at differing times (such as sales with deferred payments) and obligatory transfers (taxes and flows connected with social security).

4.195 Usually, accrual accounting is the norm for the institutional units involved. Numerous transactions consist of an exchange between two enterprises of, say, goods for financial assets. In such an exchange, accounting entries will be made in the books of each enterprise, showing the same dates for the acquisition of the goods and the surrender of the financial assets, on the one hand, and for the acquisition of the financial assets and the surrender of the goods, on the other. Sometimes, however, the two parties involved in a transaction will not perceive it as occurring at the same moment. Furthermore, some transactors, in particular government units, do not keep records of purchases on an accrual basis. In these cases, the rules of consistency in the integrated framework of the SNA require that efforts should be undertaken to correct basic statistics for major deviations and flaws. The application of the general rule of recording on an accrual basis to the most common circumstances is discussed below.

Time of recording of transactions in goods and services

4.196 The time of recording of the acquisition of goods is the moment when the economic ownership of those goods changes hands. When change of ownership is not obvious, the moment of entering in the books of the transaction partners may be a good indication and, failing that, the moment when physical possession and control is acquired. These subsidiary rules apply in particular to internal transactions or when a change of ownership is taken to occur under a financial lease or hire-purchase arrangement. Imports and exports of goods are recorded when change of ownership occurs. In the absence of sources specifying the date on which ownership changes, there is a strong presumption that the goods will cross the frontiers of the countries concerned either shortly before or soon after the change of ownership takes place. Trade statistics based on customs documents reflecting the physical movement of goods across the national or customs frontier may therefore often be used as an approximation. Similar rules of change in economic ownership apply to transactions in non-produced non-financial assets.

4.197 Services are recorded in the integrated framework of the SNA when they are provided. Some services are special in the sense that they are characteristically supplied on a continuous basis. Examples are operating leasing, insurance and housing services (including those of owner-occupied dwellings). These services are recorded as provided continuously over the whole period the contract lasts or the dwelling is available.

Time of recording of distributive transactions

4.198 Distributive transactions are recorded at the moment the related claims arise. As a result, for example, remuneration of employees, interest, social contributions and benefits are all recorded in the period during which the amounts payable accrue. (See paragraphs 12.142 and chapter 25 on Selected issues in financial instruments for the recording of remuneration of employees associated with employee stock options.) With respect to some distributive transactions, the time of accrual depends on the unit's decision as to when to distribute earned income or make a transfer.

4.199 Interest is recorded as accruing on a continuous basis because the financial resources are provided for use on a continuous basis. For some financial instruments, the debtor does not make any payments to the creditor until the financial instrument matures, at which time a single payment discharges the debtor's liability; the payment covers the amount of funds originally provided by the creditor and the interest accumulated over the entire life of the financial instrument. Corresponding entries to the interest accruing in each period before maturity should be recorded as financial transactions that represent an additional acquisition of the financial

asset by the creditor and an equal incurrence of a liability by the debtor.

4.200 Dividends are recorded at the moment the shares go ex-dividend. Three dates are associated with dividends:

a. the date they are declared;

b. the date they are excluded from the market price of shares, known as the ex-dividend date. The recipients of the dividends are determined from the register of shareholders at this time and subsequent shareholders do not have a right to the dividends; and

c. the date they are settled.

4.201 Although dividends sometimes may be related to the enterprise's profits in the previous period, in other cases, they are only loosely related or not at all. The price of shares includes declared dividends up to the ex-dividend date, thus the holder of the shares before the ex-dividend date owns the share and does not hold a separate debt instrument reflecting declared and unpaid dividends. Between the ex-dividend date and actual settlement, the amount payable is recorded as other accounts receivable/payable. Withdrawals from income of quasi-corporations, including distributed branch profits, are recorded when they actually take place. Reinvested earnings are derived from retained earnings, and therefore they are recorded in the period in which retained earnings accrue.

4.202 Taxes and other compulsory transfers should be recorded when the activities, transactions, or other events occur that create the government's claim to the taxes or other payments. In principle, income taxes and social contributions based on income should be attributed to the period in which the income is earned. In practice, however, some flexibility may be needed so that income taxes deducted at the source and regular prepayments of income taxes may be recorded in the periods in which they are paid, and any final tax liability on income may be recorded in the period in which it is determined; see also paragraphs 9.59 to 9.61.

4.203 Some compulsory transfers, such as fines, penalties, and property forfeitures, are determined at a specific time. These transfers are recorded at the time the issuing unit has an unconditional claim on the funds; if a fine or penalty is subject to further appeal, an unconditional claim only exists once the appeal has been resolved

4.204 Determining the time of recording for grants and other voluntary transfers can be complex because there is a wide variety of eligibility conditions that have varying legal powers. In some cases, a potential grant recipient has a legal claim when it has satisfied certain conditions, such as the prior incurrence of expenses for a specific purpose or the passage of legislation. These transfers are recorded when all requirements and conditions are satisfied. In other cases, the grant recipient never has a legal claim on the donor, and the transfer should be attributed to the time at which the settlement is made (e.g., cash payment). In general, the time of recording of voluntary transfers is determined by the time at which there is a change in the economic ownership of the resources (such as goods, services, or financial assets) that are corresponding entries to transfers.

Time of recording of transactions in financial assets and liabilities

4.205 Transactions in financial assets (including payments of cash) are recorded in the sequence of economic accounts of the SNA when economic ownership changes. Some financial claims or liabilities defined in the sequence of economic accounts, in particular trade credit and advances, are the implicit result of a non-financial transaction and are not otherwise evidenced. In these cases, the financial claim is deemed to arise when its non-financial counterpart occurs. The same holds for financial transactions that the sequence of economic accounts records between a quasi-corporation and its owner/branch and its parent.

4.206 In some cases, both parties involved in a financial transaction may record it at varying dates in their own books because they acquire the documents evidencing the transaction at different times. This variation usually is caused by the process of clearing, the time cheques are in the mail, etc. The amounts involved in such "floats" are generally substantial in the case of transferable deposits and other accounts receivable/payable. Again, reasons of consistency require that the transactions are entered on the same date for both parties. If no precise date can be fixed, the timing of the change of economic ownership is determined according to the date on which the creditor receives his payment.

4.207 For securities, the transaction date (that is, the time of the change in ownership of the securities) may precede the settlement date (that is, the time of the delivery of the securities). Both parties should record the transactions at the time ownership changes, not when the underlying financial asset is delivered. Any significant difference between transaction and settlement dates gives rise to other accounts receivable/payable. In practice, when the delay between the transaction and settlement is short, the time of settlement may be considered as an acceptable proxy, so that other accounts receivable/payable would not arise. In cases of longer delays, however, other accounts receivable/payable should be identified.

4.208 According to the accrual basis, repayments of debts are recorded when they are extinguished (such as when they are paid, or rescheduled, or forgiven by the creditor). When arrears occur, no transactions should be imputed, but the arrears should continue to be shown in the same instrument until the liability is extinguished. If the contract provided for a change in the characteristics of a financial instrument when it goes into arrears, this change should be recorded as a reclassification in the other changes in the financial assets and liabilities account. The reclassification applies to situations where the original contract remains, but the terms within it changes (for example, interest rates or repayment periods). If the contract is renegotiated or the nature of the instrument changes from one instrument category to another (for example, from bonds to equity), the consequences are to be recorded as new transactions. Consistent with the accrual principle, an overdue obligation to settle a financial derivative contract is not recorded as a transaction; however, the obligation is reclassified to a debt liability because of the change in the nature of the claim.

4.209 Activation of one-off (non-standardized) guarantees gives rise to financial transactions because this involves a creation of a new liability. The time of recording of flows arising from activation of one-off guarantees (including capital transfers and other changes in the volume of assets and liabilities, if applicable) is determined by the occurrence of the events activating the guarantee. The treatment of flows arising from the activation of one-off guarantees is described in more detail in chapter 25 on Selected issues in financial instruments.

4.210 Employee stock options (ESOs) are recognized at grant date. Remuneration of employees associated with employee stock options should be recorded as accruing over the period to which the option relates, which generally is the period between the granting and vesting dates. Sometimes, the options may cover the period before the granting date, which should also be taken into account when allocating the remuneration of employees. Recording of flows associated with ESOs are discussed in chapter 25.

Time of recording of output and intermediate consumption

4.211 The principle of recording on an accrual basis implies that output is recorded over the period in which the process of production takes place. Thus, additions to work-in-progress are recorded continuously as work proceeds. When the production process is terminated, the whole of the work-in-progress accumulated up to that point is effectively transformed into a stock of finished product ready for delivery or sale.

4.212 Similarly, the intermediate consumption of a good or service is recorded at the time when the good or service enters the process of production, as distinct from the time it was acquired by the producer.

Time of recording of changes in inventories, depreciation and depletion

4.213 Inventories may be materials and supplies held as inputs by producers, output as yet unsold, or products held by wholesale and retail traders. In all cases, additions to inventories are recorded when products are purchased, produced or otherwise acquired. Deductions from inventories are recorded when products are sold, used up as intermediate consumption or otherwise relinquished.

4.214 The timing of depreciation and depletion is inextricably linked with the question of its valuation. Depreciation and depletion are cost categories that accrue over the whole period the fixed asset or the natural resource in question is used for productive purposes. The exact proportioning to accounting periods depends on the rate of depreciation or depletion.

Time of recording of composite transactions and balancing items

4.215 Transactions that are measured as the balance of two or more other transactions follow the timing of the constituent basic flows. For example, implicit financial services on loans and deposits are recorded as interest on loans and deposits accrues.

4.216 The same rule for time of recording applies to balancing items. However, due to the variety of transactions and other flows covered, each with its own characteristics, some thought is needed in interpreting balancing items. For instance, in analysing the balancing item "saving" of non-financial corporations, one should be aware that the time when the operating surplus arises does not necessarily tally with the timing of the other factors, such as when dividends are payable.

Time of recording of other flows

4.217 Other changes in the volume of assets and liabilities are usually discrete events that accrue at precise moments or within fairly short periods of time, and should be recorded when the events occur.

4.218 Revaluations can occur continuously as prices and exchange rates change. Changes in prices and exchange rates often have a more continuous character, particularly in respect of assets for which active markets exist and assets with international character. In practice, nominal holding gains or losses will be computed between two points in time:

a. The moment at which:

- The accounting period begins; or
- Ownership is acquired from other units (through purchase or a transaction in kind); or
- An asset is produced; and

b. The moment at which:

- The accounting period ends; or
- The ownership of an asset is relinquished (through sale or a transaction in kind); or
- An asset is consumed in the production process.

4.219 One may wonder why nominal holding gains and losses are not calculated over a period beginning at the moment on which two units agree to a mutual exchange of assets instead of the period that starts with the moment on which the assets are acquired. After all, does not the signing of the contract fix prices, implying that the risk for any later price/exchange rate changes is being transferred? The SNA sequence of economic accounts, however, regards commitments resulting from a contract as contingent until one of the parties has performed its obligation (by passing the ownership of some asset to the other party, providing a service or providing labour or capital). Also, a unit can incur holding gains and losses only on the assets or liabilities over which it has economic ownership. The combination of these two rules implies that during the period between the signing of the contract and the date on which the first party delivers, the second party cannot incur any price/exchange rate risks on this contract: the second party neither owns the assets to be delivered nor owns a claim on the first party to be recorded in the financial accounts.

4.220 Changes in structure and classification should be entered at the moment when, according to the rules adopted in the integrated framework of the SNA, a unit or an asset is moved to a different category than that to which it was classified previously. Integrated stock-flow systems like the integrated framework of the SNA require that all reclassifications are recorded and all entries for the reclassification are recorded at the same time.

4.221 In order to obtain statistical series that are more comparable over time, one might be tempted to stockpile major reclassifications for a number of years and enter them as one block at the end of this period. However understandable this procedure might be, it does not conform to the recommendations of the integrated framework of the SNA, which aim at correct estimates on levels. Keeping records of reclassifications makes it possible in principle to reconstruct time series based on the situation in any accounting period.

Timing adjustments for external transactions

4.222 Differences in the time of recording by partner economies may occur due to various factors. One of the intrinsic problems with recording external transactions is the difference in time zones. Differences in time of recording may also arise from delays in mail deliveries or settlement clearing processes. In most cases, data at some aggregate level rather than individual records are used in the compilation of national accounts and external accounts. Several data sources may often only approximate the required basis. It is important to make timing adjustments where there are major divergences from the required basis.

4.223 In choosing among available statistical sources, compilers may wish to consider the advantage of using data for which the correct timing is already recorded. For example, records of actual drawings on loans are preferred to sources that quote authorization dates or program dates that may not be realized in fact. Some sources chosen by compilers as generally the most suitable may not have been specifically designed to yield information for the purpose of compiling national accounts and external accounts.

Balance sheet items

4.224 Stocks of assets and liabilities, as included in balance sheets, can be drawn up for any point in time. The sequence of economic accounts of the SNA defines balance sheets for all sectors at the moment when one accounting period ends and a new accounting period begins. The closing balance sheet of one period is identical to the opening balance sheet of the next one, so there remain no price changes, reclassifications or other economic flows that are not duly recognized by the sequence of economic accounts.

4. Unit of account and currency conversion

Unit of account

4.225 Values of non-financial and financial transactions as well as the values of stocks or positions of (financial) assets and liabilities may be expressed initially in a variety of currencies or in other standards of value, such as Special Drawing Rights (SDRs). The conversion of these values into a reference unit of account is a requisite for the construction of consistent and analytically meaningful accounts.

4.226 National accounts can be compiled in the domestic currency as well as in another currency. Data in domestic currency are needed because several other macroeconomic and micro data are compiled in domestic currency, except when a foreign currency is used as a legal tender. Economic analysis often uses data from several macroeconomic statistical systems. Conversely, data in an international unit of account (a foreign currency) may be needed for international liquidity management and to address special issues related to high inflation, significant exchange rate fluctuations, and multiple exchange rates. In addition, a standard or international unit of account is necessary to allow for aggregation on a global or regional basis and to facilitate international comparisons.

Domestic versus foreign currency

4.227 For an economy, a domestic currency is distinguished from foreign currency. Domestic currency is that which is legal tender in the economy and issued by the monetary authority for that economy; that is, either that of an individual economy or, in a currency union, that of the common currency area to which the economy belongs. All other currencies are foreign currencies.

4.228 Under this definition, an economy that uses as its legal tender a currency issued by a monetary authority of another economy – such as U.S. dollars – or of a common currency area to which it does not belong should classify the currency as a foreign currency, even if domestic transactions are settled in this currency. The term "currency" should be understood in the broad sense (i.e., currency includes not only banknotes and coins but all means of payments issued by financial corporations in an economic territory). Unallocated gold accounts and other unallocated accounts in precious metals giving title to claim the delivery of gold or precious metal are treated as denominated in foreign currency.

4.229 SDRs are considered to be foreign currency in all cases, including for the economies that issue the currencies in the SDR basket. Any other currency units issued by an international organization, except in the context of a currency union (see paragraphs 5.244 to 5.247), are considered foreign currency.

Currency of denomination and currency of settlement

4.230 A distinction should be made between the currency of denomination and the currency of settlement. The currency of denomination is determined by the currency in which the value of flows and stocks is fixed as specified in the contract between the parties. Accordingly, all cash flows are determined using the currency of denomination and, if necessary, converted into the domestic currency or another unit of account for the purpose of settlement or compilation of accounts. The currency of denomination is important for distinguishing transaction values and holding gains and losses.

4.231 The currency of settlement may be different from the currency of denomination. Using a currency of settlement that is different from the currency of denomination simply means that a currency conversion is involved each time a settlement occurs. The currency of settlement is important for international liquidity and measurement of potential foreign exchange drains. The currency of settlement is also important for defining reserve assets (see chapter 6 of *BPM7*).

4.232 The currency of denomination of equity and investment fund shares/units is generally the domestic currency of the economy in which the issuer is resident. However, when equity is issued in a currency other than the domestic currency, then that currency is the currency of denomination.

4.233 Debt instruments with both the amount to be paid at maturity and all periodic payments (such as coupons) indexed to a foreign currency are classified and treated as being denominated in that foreign currency.

4.234 Some financial assets and liabilities are denominated in more than one currency. However, if the amounts payable are linked to one specific currency, then the liability should be attributed to that currency. Otherwise, compilers are encouraged to disaggregate such multicurrency instruments by the component currencies.

4.235 Determining the currency of denomination is not always clear in financial derivative contracts to purchase or sell foreign currency using domestic currency. The decisive factor in determining the currency of denomination for these contracts is the exposure to currency movements. If settlement of a financial derivative contract is linked to a foreign currency, even though payment is required in domestic currency, then the financial derivative is to be classified as denominated in foreign currency.

Currency conversion principles

4.236 Flows denominated in a foreign currency are converted to their value in the domestic currency at the rate prevailing when the flows take place, and positions are converted at the rate prevailing on the balance sheet date. The midpoint between the buying and selling rates should be used at the time of transaction (for transactions) and at the close of business on the reference date for positions, with the difference between buying or selling prices and midpoint prices to be treated as service charges. The valuation in the domestic currency of a purchase or sale on credit denominated in a foreign currency may differ from the value in domestic currency of the subsequent cash payment because the exchange rate changed in the interim. Both transactions should be valued at their current market values as of the dates they actually occurred, and a holding gain or loss resulting from the change in the exchange rate should be recorded for the period or periods in which the gain or loss occurs.

4.237 In principle, the actual exchange rate applicable to each transaction should be used for currency conversion. The use of a daily average exchange rate for daily transactions usually provides a good approximation. If daily rates cannot be applied, average rates for the shortest period should be used. Some transactions occur on a continuous basis, such as the accrual of interest over a period of time. For such flows, therefore, an average exchange rate for the period in which the flows occur should be used for currency conversion.

4.238 Derived measures relating to a period are calculated by subtracting one type of flow from another. In principle, therefore, derived measures of flows in one currency (e.g., domestic currency) should not be directly converted into another currency (e.g., foreign currency). First, the underlying flows themselves

should be converted from the domestic currency into the foreign currency. Then, the derived measures in foreign currency can be calculated from the relevant flows denominated in foreign currency. It is possible that a derived measure, such as saving and the current account balance in the external accounts, denominated in one currency may be different or even with the opposite sign from that denominated in another currency. In addition to the variations in exchange rates, the variations in the timing of underlying flows cause the differences in a derived measure denominated in different currencies.

4.239 Under a multiple exchange rate regime, two or more exchange rates are applicable to different categories of transactions; the rates favour some categories and discourage others. Such rates incorporate elements similar to taxes or subsidies. Because the multiple rates influence the values and the undertaking of transactions expressed in domestic currency, net proceeds implicitly accruing to authorities as a result of these transactions are calculated as implicit taxes or subsidies. The amount of the implicit tax or subsidy for each transaction can be calculated as the difference between the value of the transaction in domestic currency at the actual exchange rate applicable and the value of the transaction at a unitary rate that is calculated as a weighted average of all official rates used for external transactions. For conversion of positions of external financial assets and liabilities in a multiple rate system, the actual exchange rate applicable to specific assets or liabilities at the beginning or end of the accounting period is used.

4.240 Parallel (unofficial) or black market rates cannot be ignored in the context of a multiple rate regime and can be treated in different ways. For instance, if there is one official rate and a parallel market rate, the two should be handled separately. Transactions in parallel markets should be converted using the exchange rate applicable in that market. If there are multiple official rates and a parallel rate, the official rates and the parallel rate should be treated as distinct markets in any calculation of a unitary rate. Transactions effected at the parallel rate usually should be converted separately at that rate. In some instances, however, parallel markets may be considered effectively integrated with the official exchange rate regime. Such is the case when most or all transactions in the parallel market are sanctioned by the authorities or when the authorities actively intervene in the market to affect the parallel rate. In these cases, the calculation of the unitary rate should include both the official and parallel market rates. If only limited transactions in the parallel market are sanctioned by the authorities, the parallel rate should not be included in the calculation of a unitary rate.

4.241 More details on the compilation of national accounts and external accounts under multiple exchange rate systems can be found in the *Short guide on the treatment of multiple exchange rate systems (forthcoming)* and in the *BPM7 Compilation Guide (forthcoming).*

5. Aggregation, netting, consolidation

Aggregation

4.242 The immense number of individual transactions, other flows, and assets and liabilities within the scope of the integrated framework of the SNA have to be arranged in a manageable number of analytically useful groups. In the integrated framework, such groups are constructed by crossing two or more classifications.

4.243 As a minimum, in the integrated framework of the SNA, a classification of institutional sectors or industries is crossed with the classification of transactions, other accumulation entries or assets. Additionally, revenues must be distinguished from expenditures and assets from liabilities. In order to accommodate more detailed analysis, the classes thus generated may be further subdivided: examples are specifications of kind of product or asset, of function and of transaction partners.

4.244 Since the classifications in the integrated framework of the SNA contain a number of levels made explicit in the codes for the various transactions, other flows and assets, corresponding levels of aggregation may be distinguished.

4.245 Although conceptually the value for each aggregate is the sum of the values for all elementary items in the relevant category, in practice other estimation methods are frequently used. In the first place, information on elementary transactions, other flows and assets may be incomplete or even non-existent. Secondly, the data obtained from different primary sources are usually not fully consistent due to variations in definitions and coverage, so adjustments at the aggregate level are necessary to reconcile them.

Netting

4.246 Individual units or sectors may have the same kind of transaction both as an expenditure (debit/expenditure in balance of payments current and capital accounts) and as a revenue (credit/revenue in balance of payments current and capital accounts) (for example, they both pay and receive interest) and have the same kind of financial instrument both as an asset and as a liability (for example, they may have a claim in the form of debt securities as well as a liability in the form of debt securities). Aggregations or combinations in which all elementary items are shown for their full values are called gross recordings (e.g., all interest credits/revenues are aggregated separately from all interest debits/expenditures). Aggregations or combinations whereby the values of some elementary items are offset against items on the other side of the account or which have an opposite sign are called net recordings (e.g., transactions of financial assets are netted with the transactions in liabilities of the same financial instrument).

4.247 In the sequence of economic accounts of the SNA a gross recording is recommended, apart from the degree of netting that is inherent in the classifications themselves. In fact, netting is already a feature of many of the recommendations of the integrated framework of the SNA. It mostly serves to highlight an economically important property that is not apparent from gross data.

4.248 Netting is implicit in various transaction categories, the most outstanding example being "changes in inventories", which underlines the analytically significant aspect of overall capital formation rather than tracking daily additions and withdrawals. All balancing items also involve netting. To avoid confusion, the integrated framework of the SNA uses the words "gross" and "net" in a very restrictive sense. Apart from a few headings ("net worth" and "net lending or net borrowing"), the SNA classifications employ the word "net" exclusively to indicate the value of variables after deduction of depreciation and depletion.

4.249 In the case of flows of financial assets and liabilities, the terms "net changes in assets" and "net changes in liabilities" are used to reflect the nature of the financial flows. Financial flows reflect changes due to all credit and debit entries during an accounting period. That is, financial flows are recorded on a net basis separately for each financial asset and liability. The use of the terms "net changes in assets" and "net changes in liabilities" brings the financial account into line with the convention used in the accumulation accounts. These are general terms that apply to both the financial account and other changes in assets and liabilities account. The use of these terms also simplifies the interpretation of data. For both assets and liabilities, a positive change indicates an increase in stocks and a negative change indicates a decrease in stocks. The interpretation of increase or decrease under the credit or debit notion, however, depends on whether the increase or decrease refers to assets or liabilities (a debit for an asset is an increase while a debit for a liability is a decrease). While the debit and credit presentation is not emphasized for financial account transactions, it is important to recognize and maintain the accounting identities; for example, a credit is always conceptually matched with a corresponding debit, the latter relating to either an increase in an asset, or reduction in a liability.

4.250 In some cases, a clear distinction between assets and liabilities may not be feasible (such as for financial derivatives in the form of forward contracts, which could change between assets and liabilities). In such cases, it may not be possible to apply the above recording principle, which requires separate presentation of transactions in assets and transactions in liabilities. For such financial instruments, net transactions in assets and liabilities combined may have to be recorded.

4.251 Transactions and other flows in financial assets and liabilities are recorded as net changes in financial assets and net changes in liabilities, respectively. The net recording principle should be applied at the lowest level of classification of financial instruments taking into account the functional, institutional sector, maturity, and currency classifications, as applicable. Generally, the net recording principle should be applied within a given standard component of assets or liabilities

Consolidation

4.252 Consolidation is a special kind of cancelling out of flows and stocks that should be distinguished from other kinds of netting. It involves the elimination of those transactions or debtor or creditor relationships that occur between two transactors belonging to the same institutional sector or subsector. Consolidation should not be seen as a sheer loss of information; it entails an elementary specification by the transaction partner. Consolidation may be most relevant for financial corporations and general government. There is more detail

on this in chapter 30 on General government and the public sector. For certain kinds of analysis, information on the transactions of these (sub)sectors with other sectors and the corresponding "external" financial position is more significant than overall gross figures. As a rule, however, the entries in the sequence of economic accounts of the SNA are not consolidated.

4.253 The rule of non-consolidation takes a special form regarding the transaction categories "output" and "intermediate consumption". These transactions are to be recorded throughout at the level of establishments. This implies specifically that the accounts for institutional sectors and for industries should not be consolidated in respect of output delivered between establishments belonging to the same institutional unit.

F. Symmetry of reporting

4.254 Symmetry of reporting by counterparties is important to ensure consistency, comparability, and analytical usefulness of national accounts. The quadruple-entry accounting system discussed in paragraphs 4.123 to 4.127 underlies symmetry of reporting. The internationally agreed guidelines for definitions, classifications, time of recording and valuation principles, and the quadruple-entry accounting system provide a basis for conceptual consistency of international reporting by both parties or economies involved in a transaction or financial position. Correct application of these guidelines and principles is important for bilateral comparisons, global balances, and regional and global aggregates.

4.255 National accounts group the flow and stock data of individual units into sectoral and national aggregates. The accounts can also be prepared for a region and the world as a whole. Without applying strict consistency rules, it would be impossible to give proper interpretation to various aggregates. These requirements apply whether or not the data consolidate flows and stocks of the units they cover, and whether or not they show any subgroups of units within the overall total.

4.256 Micro-level data on the basis of which the national accounts are compiled do not necessarily meet the consistency requirements needed for national accounts. Differences in valuation, timing, and classification may occur in many cases. Inconsistency in valuation may often occur for barter transactions. Different valuation bases may have been used by creditors and debtors for some financial assets, such as non-performing loans. Timing differences may occur not only due to differences in timing zones and delays in check-clearing systems, but also because units' perceptions of the timing of changes in ownership and recognition of revenues and expenditures may vary.

4.257 Significant achievements have been made at the national and international levels to come to more uniform business accounting standards. Accordingly, disparities between individual micro accounts have tended to fall. Business accounting standards are geared toward individual accounts, however, and therefore do not necessarily ensure consistency across units. Current business accounting standards prescribe that loans be treated differently depending on whether they appear as a credit or a debit. This approach cannot be applied in a consistent horizontal double-entry bookkeeping system. Tax and supervisory regulations are a second source for harmonization of accounting practices. In so far as these rules differentiate between specific sections of the economy, however, they also may be a cause for discrepancies between micro accounts.

Annex: Methods to value transactions and stocks

4A.1 This annex starts with an overview of the various methods for valuing transactions, in order of preference, although not all methods are applicable for each and every type of transaction. Subsequently, the methods to value stocks of assets and liabilities are described. The latter does not concern the initial recognition, i.e., the time at which the assets enter the balance sheets, as the valuation of these flows is already covered under transactions.

1. Methods for valuing transactions

Observed exchange values (or observed market prices)

4A.2 Values based on the prices actually observed in the exchange of goods, services and assets, are generally considered as the most appropriate measure in line with the valuation principles for macroeconomic statistics. From a conceptual point of view, exceptions could be made for distorted transfer prices between affiliated enterprises and concessional pricing (see paragraphs 4.147 to 4.152), although in practice adjustments are usually not made, mainly for reasons of feasibility and (international) consistency.

Market equivalent prices

4A.3 In quite a number of cases, actual exchange values are not available. Exchange prices could then be approximated by using the prices of similar goods, services and assets. This valuation method is particularly relevant in the following areas:

- barter transactions;
- consumption of goods produced for own final use;
- owner-occupied housing services; and
- exceptional cases of own-account capital formation of assets, for which a full range of the assets are regularly traded on the market (e.g., dwellings, cloud services providers building their own servers, or other cases in which equipment is constructed by producers).

4A.4 An important prerequisite for applying this valuation method is the homogeneity, or comparability, of the relevant goods, services and assets. Where homogeneity does not exist, it is also considered acceptable to apply, for example, hedonics to adjust for different characteristics in the goods, services and assets under consideration, although these hedonic valuation methods may be rather complicated, requiring significant amounts of source data. Moreover, the goods, services and assets which are used to arrive at a market equivalent price should be traded under the same market conditions as the goods, services and assets under consideration. For example, using data on rentals for dwellings, which are subsidised by government, is not considered appropriate for arriving at market equivalent prices for owner-occupied housing services in a competitive market. Finally, the markets for the goods, services and assets which are used for the comparison should be well-established, and not too thin, which sometimes may be problematic for e.g., certain types of dwellings in the case of estimating owner-occupied housing services.

Indirect valuation

4A.5 There are a few cases, in which the transactions have to be based on what is here referred to as an “indirect valuation” method. One example concerns the imputation of reinvested earnings. In this case, the valuation is based on the foreign direct investor’s share of distributable income less amounts declared for dividend distribution to the direct investment enterprise, or less the withdrawals from income of the quasi-corporations by the foreign direct investor.. Instead of referring to this as an example of indirect valuation, one could also argue that the reinvested earnings are derived, although indirectly, from observed exchange values. Other examples of indirect valuation relate to the measurement of non-life insurance output, as the difference between actual premiums earned, plus premium supplements, minus claims, or the derivation of implicit

financial services on loans and deposits as the difference between bank interest and SNA interest; see chapter 7 on Production account for more details.

Sum of costs

4A.6 A method, which is frequently applied in the system of national accounts, is the sum of costs method. According to this method, it is assumed that exchange values, can be approximated by summing up the costs of production, as follows:

- intermediate consumption;
- remuneration of employees;
- other taxes, less subsidies, on production;
- depreciation and depletion related to capital used in production; and
- net return to capital used in production;
- rent payable on the use of (rented) non-produced non-financial assets.

4A.7 This method is applied in various circumstances, in particular in the following cases:

- non-market output of government, NPISHs and the central bank;
- own-account production of fixed assets; and
- although less frequently, other goods produced for own final use, for which it is not feasible to make an estimate on the basis of similar goods traded on the market.

4A.8 Regarding renumeration of employee, also the labour input of the owner of the unincorporated enterprise and his/her family members may need to be estimated. As the remuneration for this labour input is not explicitly known, because of it being implicitly included in mixed income, an estimate of the relevant labour input could be based on wage rates paid for similar types of work.

4A.9 Regarding the extent of capital services, i.e. depreciation, depletion and net return to capital, all non-financial assets used in the production of the relevant goods and services should be included, thus not only fixed assets but also inventories and non-produced non-financial assets. Having said that, one may assume that natural resources such as mineral and energy resources are typically not used in the relevant production processes. Furthermore, in the case of measuring the output of government services, by convention, due to significant issues regarding data availability, city parks and historical monuments, and undeveloped land, are to be excluded from the scope of assets to which a return to capital should be applied.

4A.10 However, in the case of own-account production of intellectual property products, such as freely available R&D produced by government, it should be avoided to also include capital services from previously produced intellectual property upon which the newly produced asset builds. Such an approach would lead to the undesirable effect that, assuming constant labour input, the intellectual property would continue to increase as a result of the depreciation (and net return to capital) of the past intellectual property used in production of newly produced intellectual property.

4A.11 For the net return to capital, it is recommended to use a rate of return from an opportunity costs perspective. Such a rate could be approximated by applying a mark-up for normal net operating surplus. A more prudent approach is to use a rate based on the interest rate paid for the borrowing of funds, which may differ across institutional sectors and/or industries, given differences in the perceived risks attached to borrowing funds to the relevant economic agents. The latter approach would be preferable for non-market producers, who do not aspire to make profits.

4A.12 Beyond the integrated framework of national accounts, the sum of costs is also often used for valuing the output of unpaid household services for own final use. Here, the conceptually preferable option for valuation is to look at the exchange prices of similar goods and services, but it may not be that easy to find relevant information on the quantities of the services produced, and also to collect data on comparable services produced for the market, adequately adjusted for quality and productivity. For these reasons, in practice, the

output of these services produced by households for own final use is valued using the sum of costs approach.

4A.13 Importantly, when applying the sum of costs method for unpaid household services, a value for the labour input, adequately adjusted for quality and productivity, has to be imputed. An issue is whether to estimate the labour input with replacement costs (i.e., the labour costs of similar occupations in the market) or with opportunity costs (i.e., the costs foregone when producing unpaid household services). The latter may be relevant in the case a household is unconstrained in its allocation of time between selling its labour services and other usages of time, and/or in the case one wants to arrive at a welfare-measure of consumption. For this reason, the use of replacement costs is considered the most appropriate way of valuation for arriving at an approximation of the exchange price, consistent with the integrated framework of national accounts.

Short summary of methods for valuing transactions

4A.14 Apart from the relatively exceptional case of indirect valuation, the preferred methods for valuing transactions can be summarised as follows:

- In the case of goods, services and assets, which are transacted on the market via monetary settlement, the values actually exchanged are the basis for valuation.
- In the case of goods, services and assets, which are transacted via barter type, and also the consumption of goods produced for own final use, usually prices can be derived from market transactions of similar goods, services and assets.
- In the case of unpaid household services produced for own final use, a distinction should be made between owner-occupied housing services, which are included in the production boundary of the integrated framework of the SNA versus other services which are not included in this production boundary:
  - For the former services, the preferred method is to use market equivalent prices which can be derived from market transactions of similar services. However, as this often concerns relatively heterogeneous products and assets, adequate adjustments need to be made to account for this heterogeneity.
  - For the other unpaid household services, market equivalent prices may also be used. However, as it may be hard to find relevant data on the quantities of services provided, the default option is to use the sum of costs method.
- In the case of own account capital formation of assets, the default option is the application of the sum of costs method. However, when the assets are relatively homogeneous and regularly traded on the market (e.g., dwellings), preference is given to market equivalent prices, adequately adjusted for heterogeneity.
- Finally, in the case of non-market output of government and NPISHs, output and final consumption should be valued by using the sum of costs method.

2. Methods for valuing stocks of assets and liabilities

4A.15 In discussing each of the valuation methodologies for the valuation of stocks of assets and liabilities, a distinction is made between non-financial assets and financial assets, as the relevance of the various methodologies can differ quite significantly for these two types of assets. Moreover, when it comes to the valuation of financial instruments, it should be noted that the consistency in valuing assets and liabilities is an important prerequisite in the sequence of economic accounts of the SNA.

Observed market prices

4A.16 The most obvious way to arrive at current (market) prices for stocks, or positions, recorded on the balance sheet at a certain point in time is the use of prices observed in the market. Preferably, the relevant markets

should be trading in considerable volumes, with prices listed at regular intervals. However, if traded from time to time, recent market transactions could also be used as an approximation of the current market price.

4A.17 Unfortunately, this valuation method, which is preferable from a conceptual point of view, can only be applied in a limited number of cases, mainly relating to financial assets, first and foremost for securities traded on a market, like the stock exchange, in which each asset traded is completely homogeneous, is often traded in considerable volume, and has its market price listed at regular intervals. It should also be noted that for debt securities, users often request supplementary information on the nominal value (see below) of the liabilities, in addition to the valuation at market prices. For example, in the case of government debt, the principal method of valuation is at nominal value, as this reflects, in addition to accrued interest, the actual repayments to be made in the future.

4A.18 As already noted, the method of using observable market prices is conceptually sound, provided that the relevant assets are (relatively) homogenous, and regularly traded in active markets with regular price quotations. If the latter conditions are not met, other valuation methods may need to be applied.

Market equivalent prices

4A.19 The alternative for directly observed prices is to approximate current prices by using observable market prices of similar assets. This valuation method could also include expert estimates, which are typically based on information from the market as well.

4A.20 Valuing assets at market equivalent prices can be applied for less homogenous non-financial assets which are regularly traded on the market, such as dwellings and certain types of generic (second-hand) transport equipment. Of importance, especially in the case of dwellings, is the need to account for the various characteristics which are relevant for the market price setting. Moreover, it is important to realise that the market prices of dwellings and other real estate are a combination of the structure and the underlying land, which is less suitable for the integrated framework of national accounts, in which these two elements are separated. Notwithstanding this separate recording, market prices could be used as a benchmark for arriving at appropriate estimates for the sum of the two elements. For more details, see the *Eurostat-OECD Compilation Guide on Land Estimations*.

4A.21 Expert estimates made for insurance purposes, for tax purposes, etc. may be the only viable option for valuing valuables, unless the valuable has been acquired relatively recently. In addition, expert estimates could also provide a source of information for valuing real estate in the absence of appropriate markets.

4A.22 This valuation method may become less appropriate in the case of second-hand "special purpose" fixed assets, and/or in the case the markets are relatively thin. A combination of these two elements may lead to a market price, or exchange price, close to scrap value, not representing the value of such an asset used in an enterprise as a going concern. Valuation according to the written-down replacement costs (see below) is then considered more appropriate.

Valuation based on past expenses

4A.23 If market prices or market equivalent prices are not available, the next best method to arrive at an appropriate value for assets is a valuation based on past expenses. Here, one can distinguish two basic methods, depending on whether or not the assets in question are subject to depreciation: (i) historical acquisition price; and (ii) written-down replacement costs. The costs in the case of the latter method do not only concern direct expenditures on purchases of capital goods, but may also relate to expenditures made for the own-account production of fixed assets, typically valued using the sum of costs method.

4A.24 A valuation of assets based on past expenses can be applied to a considerable number of assets, but in practice it is most often used in the case of non-financial assets. The use of the first method could be used for e.g., the valuation of valuables, but it may also be a valid alternative for some financial instruments. However, in case the acquisition has taken place further in the past, the acquisition price may need to be adjusted for price changes, certainly in cases where significant price changes have been observed in the period since the acquisition.

4A.25 The second method is most commonly used for valuing fixed assets, through the application of the perpetual inventory method (PIM). The method can be considered superior to market prices and market equivalent prices, if the observable market prices, or exchange prices, for second-hand assets cannot be considered as representative for the future capital services, which can be derived from the continued use of the asset in production. A problem in the application of the written-down replacement costs method relates to the information needed for the application of this method. Most importantly, apart from long time series on past expenditures on the purchases, including price developments, of the assets in question, information is needed on the service life, the age-price or the age-efficiency profile, and discard patterns. More detailed guidance is provided in the *OECD Manual on Measuring Capital 2009, 2nd edition*.

Nominal value

4A.26 Valuation at nominal values is typically applied to non-negotiable financial instruments, such as deposits, loans and other accounts receivable/payable. Nominal value at any moment in time reflects the value of the instrument at creation and subsequent economic flows, such as transactions, holding gains and losses other than market price changes, and other volume changes. It typically comprises the outstanding amount the debtor owes to the creditor, which is composed of the outstanding principal amount including any accrued interest.

4A.27 Nominal value should be distinguished from such notions as fair value, amortized value, face value, book value, and historic cost:

a. Fair value is a market-equivalent value. It is defined as the amount for which an asset could be exchanged, or a liability settled, between knowledgeable willing parties in an arm's length transaction. It thus represents an estimate of what could be obtained if the creditor had sold the financial claim.

b. Amortized value reflects the amount at which the financial asset or liability was measured at initial recognition minus the principal repayments. Excess payments over the scheduled principal repayments reduce the amortized value whereas payments that are less than the scheduled principal repayments or scheduled interest increase the amortized value. On each scheduled date, amortized value is the same as nominal value, but it may differ from the nominal value on other dates due to the accrued interest being included in the nominal value.

c. Face value is the undiscounted amount of principal to be paid to the holder at maturity. It is also known as "par value" or simply "par". Before maturity, the market value of a bond may be greater or less than face value, depending on the interest rate payable and the perceived risk of default. As bonds approach maturity, the market value approaches the face value. For example, if interest rates are higher than the bond's coupon rate, then the bond is sold at a discount (below par). Conversely, if interest rates are lower than the bond's coupon rate, then the bond is sold at a premium (above par).

d. Book value in business accounts generally refers to the value recorded in the enterprise's records. Book values may have different meanings because their values are influenced by timing of acquisition, company takeovers, frequency of revaluations, and tax and other regulations.

e. Historic cost, in its strict sense, reflects the cost at the time of acquisition, but sometimes it may also reflect occasional revaluations.

4A.28 The use of nominal value is partly influenced by pragmatic concerns about data availability and the need to maintain symmetry between debtors and creditors. In addition, because loans are not intended for negotiability, without an active market, estimating a market price can be somewhat subjective. Nominal value is also useful because it shows actual legal liability and the starting point of creditor recovery behaviour. In some instances, loans may also be traded, often at discount, or a fair value may exist or would be possible to estimate. It is recognised that nominal value provides an incomplete view of the financial position, particularly when the loans are non-performing. Therefore, it is recommended to include, as a supplementary item, information on the nominal value of non-performing loans. Loans that have become negotiable de facto should be reclassified under debt securities.

Indirect valuation

4A.29 Financial assets and related liabilities can also be approximated with a method which could be referred to as "indirect valuation". This method is often applied for unlisted equity. In this case, the intrinsic value of a corporation is considered a valid starting point for the valuation of the equity invested, More guidance on the valuation of unlisted equity, including alternative methods, is provided in chapter 14 on Balance sheet.

Present value of future economic benefits

4A.30 In cases that the above valuation methods cannot be applied, the present value of future economic benefits is considered as a viable alternative. This method is typically used in the following areas:

- defined benefit pension entitlements;
- unlisted equity in the case other methods are considered less appropriate; and
- natural resources.

4A.31 The details of actuarial methods for estimating pension entitlements are not further elaborated here. Extensive guidance is available elsewhere, see e.g., *Technical Compilation Guide for Pension Data in National Accounts*. For estimating the value of unlisted equity using the present value of (expectations about) future profits, reference is made again to chapter 14.

4A.32 For natural resources, and possibly other non-financial assets, the method comes down to estimating the present value of future economic benefits derived from these assets (i.e., the resource rents), which often need to be approximated by the so-called "residual value method", calculated using the following formula:

- output at basic prices (related to the extracted resources)

minus

- intermediate consumption
- remuneration of employees
- other taxes less subsidies on production

equals

- gross operating surplus

plus

- specific taxes less subsidies on extraction

equals

- gross operating surplus for the derivation of resource rent

minus

- depreciation related to capital used in production
- net return to capital used in production

equals

- resource rent (= depletion plus return to natural resource)

4A.33 In the case of non-financial assets, using the method of the present value of future economic benefits can only be used if there is a direct link between the future economic benefits and the asset in question, in the sense that one can assume that there are no other assets which may have generated the residual income. Furthermore, the application of this method requires forecasting a future path of income streams, which may be quite challenging. For this purpose, assumptions need to be made on the asset life; the future path of extractions and, in the case of renewable resources, the regeneration potential of the asset in question; as well as the expected flows of revenues and expenditures associated with the extractions. The question of which

discount rate is appropriate in which circumstances is also an important question to answer. Because of these issues, the method is often considered as a last resort option, to be applied only for certain classes of assets, such as natural resources.

4A.34 Another issue, alluded to in paragraph 4.95 of this chapter, concerns the way in which the ownership of the natural resources is accounted for. Often government, usually the legal owner of mineral and energy resources, provides extraction rights to private corporations, for a series of annual payments of royalties, either or not paid in advance for a certain period of time. In doing so, the government may not appropriate the full resource rent that can be derived from the relevant resource by the extractor. Moreover, as these rights are often not transferable, so without a price being established in a market, there is no observable value of the rights. However, the private corporation as a going concern still derives value from having the rights to extract, in the form of part of the resource rents being appropriated. It is therefore recommended to apply the split-asset approach, according to which the assets in question are recorded in the accounts of the legal owner and the extractor, in proportion to the share of the resource rent appropriated.

4A.35 More detailed guidance on the recording and compilation of estimates for natural resources is provided in the *SEEA Central Framework*, as well as the *Measuring natural resources in the national accounts: a compilation guide (forthcoming)*.

4A.36 The method of the present value of future economic benefits could be applied to other types of assets as well. However, in these cases, the written-down replacement costs method is usually to be preferred. This also holds for assets produced in-house, the past investment expenditures of which are often based on the sum of costs method.

4A.37 Going beyond the integrated framework of accounts, the present value method could also be applied for estimating the value of human capital. Again the choice is between this method and the written-down replacement costs. Both methods have their advantages and disadvantages. Regarding the latter method, the relevant expenditures may be relatively easy to collect. However, service lives and depreciation patterns will have to rely on a set of assumptions. Another complication is the measurement of unpaid labour input (e.g., studying at home), which would need to rely on the income foregone. For the application of the present value method, one needs to agree on which income to use, in addition the more general complexities of forecasting the future incomes, in this case over quite lengthy periods of time. In the end, no firm recommendation is made on the preferred method, before having gained more practical experience on the application of both methods. See chapter 35 on Measuring the sustainability of well-being (SNA) for a more detailed discussion of human capital.

Short summary of methods for valuing stocks of assets and liabilities

4A.38 In summary, the following can be noted in relation to the valuation of assets and liabilities, thereby distinguishing between financial assets and liabilities versus non-financial assets.

4A.39 In the case of financial assets and corresponding liabilities, market prices or market equivalent prices are the preferable options for valuation. However, its application is relatively limited, as most financial instruments are non-negotiable and not traded on active markets with regular price quotations, the obvious exception relating to tradable securities. For non-negotiable financial instruments, one could use observed market prices, or exchange prices, from recent market transactions. However, as this methodology cannot generally be applied, a valuation at nominal values is considered the most viable option. A special case is unlisted equity, for which various methodologies can be considered; see chapter 14 on Balance sheet. Another exception concerns the estimation of defined benefit pension entitlements, which are based on actuarial type of calculations using the present value of future benefits.

4A.40 For non-financial assets, in the absence of observed market prices or market equivalent prices, two valuation methods are applied most frequently, either the written-down replacement cost method or the present value of future earnings. The former method is typically applied to fixed assets used in the production of goods and services, while the latter method is often the only alternative for arriving at an approximation of the value of natural resources. In addition, expert estimates may be the only viable option for estimating the value of valuables.

Chapter 5: Institutional units and sectors, economic territory and residence

This is a common chapter with chapter 4 of *BPM7*, and for the most part, the text is identical in both the *2025 SNA* and *BPM7*.

A. Overview

5.1 This chapter is concerned with the definition and description of institutional units and the way in which they are grouped to make up the sectors and subsectors in macroeconomic statistics. This section discusses the key concepts of an institutional unit, its residence and the economic territory. This is followed by the main principles for allocating institutional units to institutional sectors. In addition, attention is paid to the concept of population. Section B provides further guidance on corporations, while section C deals with non-profit institutions. Sections D – H provides more details on the main institutional sectors, including the subsectors distinguished, as follows: non-financial corporations (D), financial corporations (E), general government (F), households (G) and non-profit institutions serving households (H). The chapter ends with some details about the rest of the world, i.e., the accounts for transactions and positions between residents and non-residents, while section J contains more detailed guidance related to the concepts of economic territory and residence.

1. Institutional units

5.2 ***An institutional unit is an economic unit that is capable, in its own right, of owning assets, typically able to incur liabilities, and engaging in economic activities and in transactions with other units.*** The main attributes of institutional units may be described as follows:

a. An institutional unit is entitled to own goods or assets in its own right; it is therefore able to exchange the ownership of goods or assets in transactions with other institutional units;

b. It is able to take economic decisions and engage in economic activities for which it is itself held to be directly responsible and accountable at law;

c. It is typically able to incur liabilities on its own behalf, to take on other obligations or future commitments and to enter into contracts; in some exceptional cases, economic units may qualify as institutional units, even though they are not be able to incur liabilities on their own behalf, an example being local government units.

d. Either a complete set of accounts, including a balance sheet of assets and liabilities, exists for the unit, or it would be possible and meaningful, from an economic viewpoint, to compile a complete set of accounts if they were to be required.

5.3 There are two main types of units in the real world that may qualify as institutional units, namely persons or groups of persons in the form of households, and legal or social entities.

5.4 For the purpose of macroeconomic statistics, ***a household consists of a single person or a group of persons who share the same living accommodation, who pool some, or all, of their income and wealth and who consume certain types of goods and services collectively, mainly housing and food.*** In addition to private households, there are units described as institutional households that comprise groups of persons staying in hospitals, retirement homes, convents, prisons, etc. for long periods of time.

5.5 The individual members of multi-person private households are not treated as separate institutional units. Many assets are owned, or liabilities incurred, jointly by two or more members of the same household while some or all of the income received by individual members of the same household may be pooled for the benefit of all members. Moreover, many expenditure decisions, especially those relating to the consumption of food, or housing, may be made collectively for the household as a whole. It may be impossible, therefore, to draw up meaningful balance sheets or other accounts for members of the household on an individual basis. For these reasons, the household as a whole rather than the individual persons in it must be treated as the institutional unit. Also, members of institutional households are not treated as separate institutional units, if they have little or no autonomy of action or decision in economic matters.

5.6 The second type of institutional unit is a legal or social entity that engages in economic activities and transactions in its own right, such as a corporation, non-profit institution (NPI) or government unit. ***A legal or social entity is a unit whose existence is recognized by law or society independently of the persons, or other units, that may own or control it.*** Such units are responsible and accountable for the economic decisions or actions they take, although their autonomy may be constrained to some extent by other institutional units; for example, legally constituted corporations are ultimately controlled by their shareholders. Some unincorporated enterprises belonging to households or government units may behave in much the same way as legally constituted corporations, and such units are treated as quasi-corporations when they have complete sets of accounts.

5.7 In the legal sense, corporations may be described by different names: corporations, incorporated enterprises, public limited companies, public corporations, private companies, joint-stock companies, limited liability companies, limited liability partnerships, and so on. Conversely, some legal entities that are non-profit institutions may sometimes be described as "corporations". The status of an institutional unit cannot always be inferred from its name, and it is necessary to examine its objectives and functions. In macroeconomic statistics, ***the term corporations covers institutional units, mainly consisting of legally constituted corporations and also cooperatives, limited liability partnerships, notional resident units and quasi-corporations, whose principal activities are to produce goods or services for the market.*** The description of these various institutional units is given in section B.

5.8 ***Non-profit institutions (NPIs) are legal or social entities created for the purpose of producing goods and services, but whose status does not permit them to be a source of income, profit or other financial gain for the units that establish, control or finance them.*** In practice, their productive activities are bound to generate either surpluses or deficits but any surpluses they happen to make cannot be appropriated by other institutional units. The articles of association by which they are established are drawn up in such a way that the institutional units that control or manage them are not entitled to a share in any profits or other income they generate. For this reason, they are frequently exempted from various kinds of taxes. A description of the treatment of NPIs within macroeconomic statistics is given in section C.

5.9 ***Government units are unique kinds of legal entities established by political processes that have legislative, judicial or executive authority over other institutional units within a given area.*** Viewed as institutional units, the principal functions of government are to assume responsibility for the provision of goods and services to the community or to individual households and to finance their provision out of taxation or other incomes; to redistribute income and wealth by means of transfers; and to engage in non-market production.

2. Population

5.10 In the context of national accounts, data on population are important for deriving per capita figures for aggregates such as GDP and NDP. They also constitute the main elements for defining households. ***The population of a country is most simply defined as all persons who are resident in the economic territory at a given point in time***. In this definition, the SNA concept of residence is used, that is persons are resident in the country where they have the strongest links thereby establishing a centre of predominant economic interest. Generally, the criterion would be based on their intended country of residence for one year or more. In most cases, the concept of residence is straightforward, being based on the dwelling a person occupies on a permanent basis, although there are some borderline cases.

5.11 Generally, persons who are resident in a country for one year or more, regardless of their citizenship, should be included in the population measure. An exception is foreign diplomatic personnel and defence personnel, together with their families, who should be included as part of the population of their home country. The "one-year rule" means that usual residents who are living abroad for less than one year are included in the population but foreign visitors (for example, holidaymakers) who are in the country for less than one year are excluded from the measured population. Further elaboration on the application of the residence criterion in special cases is given in section J.

5.12 Annual population is typically estimated from less frequent population censuses. Censuses usually count the number of people present on a specified night or the number of people who usually live in a dwelling, even if they are not present when the census is enumerated. However, a census is often conducted only every five

or ten years and sometimes less frequently. In years between censuses, updated information on the population of a country is provided by sample-based surveys and by drawing on information on births and deaths and on net migration.

3. Residence and economic territory

5.13 ***The residence of an institutional unit is the economic territory with which an institutional unit has the strongest connection, i.e., its centre of predominant economic interest***. The concept of economic territory is consistent across macroeconomic statistics. Some key features are as follows. In its broadest sense, an economic territory can be any geographic area or jurisdiction for which statistics are required. The connection of units to a particular economic territory is determined from aspects such as physical presence and being subject to the jurisdiction of the government of the territory. The most commonly used concept of economic territory is the area under the effective economic control of a single government. However, economic territory may be larger or smaller than this, as in a currency or economic union or a part of a country or the world.

5.14 The economic territory includes the land area, airspace, territorial waters, including jurisdiction over fishing rights and rights to fuels or minerals. In a maritime territory, the economic territory includes islands that belong to the territory. The economic territory also includes territorial enclaves in the rest of the world. These are clearly demarcated land areas (such as embassies, consulates, military bases, scientific stations, information or immigration offices, aid agencies, central bank representative offices with diplomatic immunity, etc.) located in other territories and used by governments that own or rent them for diplomatic, military, scientific, or other purposes with the formal agreement of governments of the territories where the land areas are physically located. More detailed guidance on economic territory is provided in section J.

5.15 Economic territory has the dimensions of physical location as well as legal jurisdiction. The concepts of economic territory and residence are designed to ensure that each institutional unit is a resident of a single economic territory. The use of an economic territory as the scope of economic statistics means that each member of a group of affiliated enterprises is resident in the economy in which it is located, rather than being attributed to the economy of location of the head office.

5.16 In general, an institutional unit is resident in one and only one economic territory determined by the unit's centre of predominant economic interest. Exceptions may be made for multi-territory enterprises that operate a seamless operation over more than one economic territory. Although the enterprise has substantial activity in more than one economic territory, it cannot be broken up into separate branches or a parent and branch(es) because it is run as an indivisible operation with no separate accounts or decisions. Such enterprises are typically involved in cross-border activities and include shipping lines, airlines, hydroelectric schemes on border rivers, pipelines, bridges, tunnels and undersea cables. If it is not possible to identify a parent or separate branches, it is necessary to prorate the total operations of the enterprise into the individual economic territories. For more information on these special cases, see paragraphs 5.68 to 5.71.

5.17 An institutional unit has a centre of predominant economic interest in an economic territory when there exists, within the economic territory, some location, dwelling, place of production, or other premises on which or from which the unit engages and intends to continue engaging, either indefinitely or over a finite but long period of time, in economic activities and transactions on a significant scale. The location need not be fixed so long as it remains within the economic territory. The actual or intended location for one year or more is used as an operational definition; while the choice of one year as a specific period is somewhat arbitrary, it is adopted to avoid uncertainty and facilitate international consistency.

5.18 The concept of residence is consistent across macroeconomic statistics. Some key consequences follow:

a. The residence of individual persons is determined by that of the household of which they form part and not by their place of work. All members of the same household have the same residence as the household itself, even though they may cross borders to work or otherwise spend periods of time abroad. If they work and reside abroad so long (usually taken to be one year or more) that they acquire a centre of economic interest abroad, they cease to be members of their original households;

b. Unincorporated enterprises that are not quasi-corporations are not separate institutional units from their owners and, therefore, have the same residence as their owners;

c. Corporations and NPIs may normally be expected to have a centre of economic interest in the economic territory in which they are legally constituted and registered. Corporations may be resident in economic territories different from their shareholders and subsidiary corporations may be resident in economic territories different from their parent corporations. When a corporation, or unincorporated enterprise, maintains a branch, office or production site in another economic territory in order to engage in production over a long period of time (usually taken to be one year or more) but without creating a subsidiary corporation for the purpose, the branch, office or site is considered to be a quasi-corporation (that is, a separate institutional unit) resident in the economic territory in which it is located;

d. Owners of land and other natural resources, buildings and immovable structures in the economic territory of a country, or units holding long leases on either, are deemed always to have a centre of economic interest in that country, even if they do not engage in other economic activities or transactions in the country. All land and other natural resources, buildings and immovable structures are therefore owned by residents. If the legal owner is actually non-resident, an artificial unit, called a notional resident unit, is created for statistical purposes (see paragraphs 5.61 to 5.67);

e. Extraction of mineral and energy resources and exploitation of licenses can only be undertaken by resident institutional units. An enterprise that will undertake extraction is deemed to become resident when the requisite licences or leases are issued, if not before (such as in the case of exploration licenses);

f. For units such as many special purpose units/vehicles, that have few if any attributes of location, the location is determined by their place of incorporation; see paragraphs 5.81 and 5.82.

Further elaboration of the concept of residence for a number of borderline cases is given in section J.

4. Sectoring and economic behaviour

5.19 The institutional sectors distinguished in the integrated framework of the SNA group together similar kinds of institutional units. Corporations, NPIs, government units and households are intrinsically different from each other in that their economic objectives, functions and behaviour are different.

5.20 Institutional units are allocated to sector according to the nature of the economic activity they undertake. The three basic economic activities recorded in the sequence of economic accounts are production of goods and services, consumption to satisfy human wants or needs and accumulation of various forms of capital. Corporations, with the exception of the central bank, undertake either production or accumulation (or both) but do not undertake (final) consumption. Government as well as the central bank undertake production (but mainly of a different type from corporations), accumulation and final consumption on behalf of the population. All households undertake final consumption on their own behalf and may also engage in production and accumulation. NPIs are diverse in nature. Some behave like corporations, some are effectively part of government and some undertake activities similar to government but independently of it.

5.21 Fundamental to the distinction between corporations and government is the basis on which production is undertaken. Corporations, again with the exception of the central bank, produce for the market and aim to sell their products at economically significant prices. Prices are said to be economically significant if they have a significant effect on the amount that producers are willing to supply and the amounts purchasers wish to buy. These prices normally result when the producer has an incentive to adjust supply either with the goal of making a profit in the long run (or at a minimum, covering capital and other costs) and consumers have the freedom to purchase or not purchase and make the choice on the basis of the prices charged. There is extensive discussion on the definition of economically significant prices and the meaning of market and non-market production in chapter 7 on Production account and chapter 30 on General government and the public sector.

5.22 Corporations are divided between those mainly providing financial services and those mainly providing goods and other services. The two groups are known as financial corporations and non-financial corporations respectively. The distinction is made because of the special role that financial corporations play in the economy.

5.23 The economic objectives, functions and behaviour of government units are quite distinct. They organize and finance the provision of goods and services to individual households and the community at large, and therefore incur expenditures on final consumption. They may produce most of these goods and services themselves but the products are usually either provided free or at prices determined by considerations other than purely market forces. Although classified as a financial corporation, the same holds for the central bank. Government units are also concerned with distribution and redistribution of income and wealth through taxation and other transfers. Government units include social security funds.

5.24 The economic objectives, functions and behaviour of households are different again. Although primarily consumer units, they can also engage in production. Often this production activity is relatively small scale and includes informal and subsistence activities. When the production units of households are not legal entities (and cannot be treated as such), they are described as unincorporated enterprises. They remain part of the same institutional unit as the household to which they belong.

5.25 NPIs are institutional units created for the purpose of producing or distributing goods or services but not for the purpose of generating any income or profit for the units that control or finance them. Nevertheless, some NPIs deliver goods and services to customers at economically significant prices and, when they do, these NPIs are treated in the same way as corporations. Other NPIs that produce goods and services but do not sell them at economically significant prices are either government units, if controlled by government, or they are treated as a special group of units called non-profit institutions serving households (NPISHs). The latter units are in effect non-governmental social institutions.

5.26 The digitalization of economic activities (financial as well as non-financial services) has a significant impact on the way in which these activities are performed. Apart from the emergence of new products, such as the services of digital intermediation platforms, cloud computing, etc., this phenomenon does not affect the classification of economic activities into institutional (sub)sectors and industries. Relevant units should continue to be classified in line with their economic objectives, functions and behaviour. The same holds for the classification of units involved in economic activities arising from technological innovations in the financial corporations' sector, often referred to as Fintech. Chapter 22 on Digitalization contains a more extensive discussion on the impact of digitalization for the measurement of the economy.

5. The total economy

5.27 ***The total economy (S1) is defined as the entire set of resident institutional units.*** The resident institutional units that make up the total economy are grouped into five mutually exclusive institutional sectors. Sectors are groups of institutional units and the whole of each institutional unit must be classified to one or other sector of the sequence of economic accounts of the SNA. The full sequence of economic accounts may be constructed for a single institutional unit or a group of units. The attributes of an institutional unit described in paragraph 5.2 explain why it is not possible to compile a full set of accounts for only part of a unit. However, it is possible, useful and common practice to compile some accounts for sub-divisions of corporations, discriminating on the basis of the type of production the parts undertake. This is the subject of chapter 6 on Enterprises, establishment and industries. For the present chapter attention focuses on the allocation of complete units to one sector or another.

Figure 5.1: Illustrative allocation of units to institutional sectors

Pre edit version

The decision tree does <u>not</u> account for the classification of special purpose units set up by government in the rest of the world

6. An overview of institutional sectors

5.28 All resident institutional units are allocated to one and only one of the following five institutional sectors:

The non-financial corporations' sector;

The financial corporations' sector;

The general government sector;

The non-profit institutions serving households' sector;

The households' sector.

5.29 The conceptual basis for the allocation of a unit to the appropriate sector can be seen in the top half of figure 5.1 (i.e., above the horizontal dotted line). The boxes for the sectors of the total economy, plus the box for the rest of the world, appear with double borders. Once non-resident units and households are set aside, only resident legal and social entities remain. Three questions determine the sectoral allocation of all such units. The first is whether the unit is a market or non-market producer. This depends on whether the majority of the unit's production is offered at economically significant prices or not. Due to its important role in the financial system, an exception to this general rule is made for the central bank. Although predominantly producing non-market services, the central bank is grouped together with market producers of financial services.

5.30 The second question determining sectoral allocation applies to non-market units other than the central bank, all of which are allocated either to general government or to the NPISH sector. The determining factor is whether the unit is part of, or controlled by, government. The criteria to establish control by government are discussed in section C below.

5.31 The third question determining sectoral allocation applies to market units, and also the central bank, all of which, including market NPIs, are allocated to either the non-financial corporations' sector or the financial corporations' sector. In the context of sectors, the term "corporation" is used to encompass all market producers, including cooperatives, limited liability partnerships, notional resident units and quasi-corporations as well as legally constituted corporations.

5.32 The non-financial corporations' sector includes non-profit institutions (NPIs) engaged in the market production of goods and non-financial services: for example, hospitals, schools or colleges that charge fees that enable them to recover their current production costs, or trade associations financed by subscriptions from non-financial corporate or unincorporated enterprises whose role is to promote and serve the interests of those enterprises. The non-financial corporations' sector is described further in section D.

5.33 The financial corporations' sector includes the central bank and all resident corporations whose principal activity is providing financial services including financial intermediation, insurance and pension fund services, and units that provide activities that facilitate financial intermediation. In addition, the sector includes NPIs engaged in market production of a financial nature such as those financed by subscriptions from financial enterprises whose role is to promote and serve the interests of those enterprises. The financial corporations' sector is described further in section E.

5.34 The general government sector consists mainly of central, state and local government units together with social security funds imposed and controlled by those units. In addition, it includes all non-market producers that are controlled by government units or social security funds.

5.35 The non-profit institutions serving households' sector consists of all resident NPIs, except those controlled by government, that provide non-market goods or services to households or to the community at large.

5.36 The households' sector consists of all resident households. These include institutional households made up of persons staying in hospitals, retirement homes, convents, prisons, etc. for long periods of time. It is noted that the institutions where these persons are staying (e.g., hospitals, retirements homes, prisons) generally constitute separate institutional units, different from the institutional households. Furthermore, as already noted, an unincorporated enterprise owned by a household is treated as an integral part of the latter and not as a separate institutional unit unless the accounts are sufficiently detailed to treat the activity as that of a quasi-corporation.

7. Subsectors

5.37 Each of the five institutional sectors listed above may be divided into subsectors. No single method of sub-sectoring may be optimal for all purposes or all countries, so that alternative methods of sub-sectoring are recommended for certain sectors. Dividing the total economy into sectors enhances the usefulness of the accounts for purposes of economic analysis by grouping together institutional units with similar objectives and types of behaviour. Sectors and subsectors are also needed in order to be able to target or monitor particular groups of institutional units for policy purposes. For example, the household sector has to be divided into subsectors in order to be able to show how different sections of the community are affected by, or benefit from, the process of economic development or government economic and social policy measures. Similarly, it may be important to treat corporations subject to control by non-residents as subsectors of the financial and non-financial corporate sectors, not only because they are likely to behave differently from domestically controlled corporations, but also because policymakers may wish to be able to identify and observe those parts of the economy that are subject to influence from abroad. It would also enhance the possibilities of analysing the impact of foreign-controlled corporations on the generation and distribution of income, and capital formation. The division of sectors into subsectors depends upon the type of analysis to be undertaken, the needs of policymakers, the availability of data and the economic circumstances and institutional arrangements within a country.

Breakdowns of non-financial and financial corporations based on control

5.38 One common sub-sectoring, as shown in the bottom half of figure 5.1 (i.e., below the horizontal dotted line), is to identify those non-financial corporations and financial corporations that are controlled domestically and those that are foreign-controlled (for the definition of control of corporations, see paragraphs 5.106 to 5.121 below). Domestically controlled corporations are further split into public corporations (those controlled by government) and others, which are known as national private corporations. In addition, "of which" items are included for domestically controlled public and private corporations that are part of a domestic multinational enterprise (MNE) group, i.e., those corporations whose ultimate controlling parent is resident in the same economy. In this respect, ***an MNE is defined as a legal entity that has at least one non-resident affiliate or branch, and exercises control over its affiliate(s) or branch(es) either directly – by owning over 50 percent of the voting power in the unit – or by indirect transmission of control. The MNE is the ultimate controlling parent – the direct investor at the top of the control chain.*** The MNE group consists of the MNE and the set of units – regardless of their economies of residence – that are under the control of the same ultimate controlling parent (see chapter 23 on Globalization for additional details on MNEs). For countries where the presence of special purpose entities (SPEs; see paragraphs 5.81 and 5.82 below) is significant, a separate identification of SPEs, as an "of which" item, is recommended as supplementary information.

Breakdowns of households

5.39 Distributional information on household income, consumption, saving and wealth is considered highly relevant to the analysis of (material) well-being. Therefore, additional breakdowns of the households' sector are recommended as a standard. As a minimum, compilers should aim to provide breakdowns according to income and wealth deciles, and, if possible, also for the top 5 per cent and the top 1 per cent. Alternative breakdowns, for example by main source of income, household type, housing status and by age of the reference person are also recommended, as supplementary items. Further details are provided in paragraphs 5.220 to 5.231 as well as chapter 32 on Households.

Non-profit institutions

5.40 As described above, the sequence of economic accounts assigns NPIs to different sectors according to whether they produce for the market or not, regardless of motivation, status of employees or the activity they are engaged in. However, there is increasing interest in considering the full set of NPIs as evidence of "civil society", so it is recommended that NPIs within the corporate and government sectors be identified in distinct subsectors so that supplementary tables summarizing all NPI activities can be derived in a straightforward

manner as and when required. (See chapter 31 on Non-profit institutions for more information.)

Other sub-sectoring

5.41 The question of sub-sectoring is included in the more extensive consideration of each institutional sector in following sections. Particular subsectors are suggested for general government, non-financial corporations, financial corporations and households. An overview of the standard breakdowns in the system of national accounts is given in table 5.1.

8. The rest of the world

5.42 On occasion it is convenient to refer to non-resident households or corporations as units that are resident in the rest of the world. Whenever accounts are drawn up for institutional sectors, as well as an account for the total economy, a further account is presented showing the relationship with the rest of the world. In effect, therefore transactions and positions with the rest of the world are recorded as if the rest of the world is a de facto sixth sector.

B. Corporations in macroeconomic statistics

1. Types of corporations

5.43 In the sequence of economic accounts of the SNA, and also in the *BPM* and other macroeconomic statistics, the term corporation is used more broadly than in just the legal sense. In general, all units that are:

a. capable of generating a profit or other financial gain for their owners,

b. recognized at law as separate legal entities from their owners who enjoy limited liability,

c. set up for purposes of engaging in market production through the selling of all or most of their goods and/or services at economically significant prices,

are treated as corporations, however they may describe themselves or whatever they may be called. As well as legally constituted corporations the term corporations is used to include cooperatives, limited liability partnerships, notional resident units and quasi-corporations. Whenever the term corporation is used, the broader coverage rather than the narrow legal definition is intended unless otherwise stated. Each of the main components of the broader coverage is discussed in turn below.

Legally constituted corporations

5.44 Legally constituted corporations may be described by different names: corporations, incorporated enterprises, public limited companies, public corporations, private companies, joint-stock companies, limited liability companies, limited liability partnerships, and so on. ***Legally constituted corporations are legal entities created for the purpose of producing goods or services for the market that may be a source of profit or other financial gain to its owner(s). They are collectively owned by shareholders who have the authority to appoint directors responsible for its general management.***

5.45 The laws governing the creation, management and operations of legally constituted corporations may vary from country to country. Therefore, it is not feasible to provide a precise, legal definition of a corporation that would be universally valid. It is possible, however, to indicate in more detail the typical features of corporations that are most relevant from the point of view of macroeconomic statistics. They may be summarized as follows:

Table 5.1: Standard classification of institutional sectors in the sequence of economic accounts of the SNA

S1	**Total economy**
S11	Non-financial corporations
	Classification based on control
S1111	Public non-financial corporations
Of which: S1111ow	Part of domestic multinational enterprise (MNE) group
S1112	National private non-financial corporations
Of which: S1112ow	Part of domestic multinational enterprise (MNE) group
S1113	Foreign-controlled non-financial corporations[1]
Of which: S1113ow	Special purpose entities (SPEs)
S12	Financial corporations
	Classification based on control
S1211	Public financial corporations
Of which: S1211ow	Part of domestic multinational enterprise (MNE) group
S1212	National private financial corporations
Of which: S1212ow	Part of domestic multinational enterprise (MNE) group
S1213	Foreign-controlled financial corporations[1]
Of which: S1213ow	Special purpose entities (SPEs)
	Classification based on type of financial services
S1221	Central bank
S1222	Deposit-taking corporations except the central bank
S1223	Money market funds (MMFs)
S1224	Non-MMF investment funds
S1225	Other financial intermediaries except insurance corporations and pension funds
S1226	Financial auxiliaries
S1227	Captive financial institutions and money lenders
S1228	Insurance corporations
S1229	Pension funds
S13	General government
	General government classification—alternative A
S1311	Central government
S1312	State government
S1313	Local government
S1314	Social security funds
	General government classification—alternative B
S1321	Central government including social security funds
S1322	State government including social security funds
S1323	Local government including social security funds
S14	Households[2]
S15	Non-profit institutions serving households
S2	**Rest of the world**

1 While all foreign-controlled corporations are foreign direct investment enterprises, the reverse is not true (see paragraph 5.121).
2 Subsectors of the household sector will be based on income and wealth deciles.

a. A corporation is a unit created by process of law whose existence is recognized independently of the other institutional units that may own shares in its equity. The existence, name and address of a corporation are usually recorded in a special register kept for this purpose. A corporation may normally be expected to have a centre of predominant economic interest (that is, to be resident) in the country in which it is created and registered.

b. A corporation that is created for the purpose of producing goods or services for sale on the market does so at prices that are economically significant. This implies that it is a market producer. (A description of economically significant prices and the difference between market and non-market production is given in chapter 7 on Production account and chapter 30 on General government and the public sector.)

c. A corporation is fully responsible and accountable at law for its own actions, obligations and contracts, this being an essential attribute of an institutional unit in the sequence of economic accounts of the SNA, the *BPM* and other macroeconomic statistics. A corporation is subject to the tax regime of the country where it is resident in respect of its productive activities, income or assets.

d. Ownership of a corporation is vested in the shareholders collectively. The amount of income actually distributed to shareholders as dividends in any single accounting period is decided by the directors of the corporation. Income is usually distributed to shareholders in proportion to the value, or amounts, of the shares or other capital participations they own. There may be different kinds of shares in the same corporation carrying different entitlements.

e. In the event of a corporation being wound up, or liquidated, the shareholders are similarly entitled to a share in the net worth of the corporation remaining after all assets have been sold and all liabilities in debt instruments paid. If a corporation is declared bankrupt because its debt-related liabilities exceed the value of its assets, the shareholders are usually not liable to repay the excess liabilities. However, in cases of implicit guarantees or significant reputational risks, the owner may experience to have a negative equity position; see paragraphs 14.86 to 14.89.

f. Control of a corporation is ultimately exercised by the shareholders collectively. A corporation has a board of directors that is responsible for the corporation's policy and appoints the senior management of the corporation. The board of directors is usually appointed by the collective vote of the shareholders.

g. In practice, however, some shareholders may exert much more influence or control over the policies and operations of a corporation than others.

h. The voting rights of shareholders may not be equal. Some types of shares may carry no voting rights, while others may carry exceptional rights, such as the right to make specific appointments to the board of directors or the right to veto other appointments made on a majority vote. Such exceptional rights may be held by the government when it is a shareholder in a corporation.

i. Many shareholders with voting rights do not choose to exercise them, so that a small, organized minority of active shareholders may be in a position to control the policy and operations of a corporation.

Cooperatives, limited liability partnerships, etc.

5.46 Cooperatives are set up by producers for purposes of marketing their collective output. The profits of such cooperatives are distributed in accordance with their agreed rules and not necessarily in proportion to shares held, but effectively they operate like corporations. Similarly, partnerships whose members enjoy limited liability are separate legal entities that behave like corporations. In effect, the partners are at the same time both shareholders and managers.

Quasi-corporations

5.47 Some unincorporated enterprises function in all (or almost all) respects as if they were incorporated. These

are termed quasi-corporations in the sequence of economic accounts of the SNA, the *BPM* and other macroeconomic statistics and are included with corporations in the non-financial and financial corporations' sectors. A quasi-corporation is:

a. either an unincorporated enterprise owned by a resident institutional unit that has sufficient information to compile a complete set of accounts and is operated as if it were a separate corporation and whose de facto relationship to its owner is that of a corporation to its shareholders, or

b. an unincorporated enterprise owned by a non-resident institutional unit that is deemed to be a resident institutional unit because it engages in a significant amount of production in the economic territory over a long or indefinite period of time.

5.48 Three main kinds of quasi-corporations are recognized in macroeconomic statistics:

a. Unincorporated enterprises owned by government units that are engaged in market production and that are operated in a similar way to publicly owned corporations;

b. Unincorporated enterprises, including unincorporated partnerships or trusts, owned by households that are operated as if they were privately owned corporations;

c. Unincorporated enterprises that belong to institutional units resident abroad, referred to as "branches".

5.49 The intent behind the concept of a quasi-corporation is clear: namely, to separate from their owners those unincorporated enterprises that are sufficiently self-contained and independent that they behave in the same way as corporations. If they function like corporations, they must keep complete sets of accounts. Indeed, the existence of a complete set of accounts, including balance sheets, for the enterprise is a necessary condition for it to be treated as a quasi-corporation. Otherwise, it would not be feasible from an accounting point of view to distinguish the quasi-corporation from its owner.

5.50 As a quasi-corporation is treated as a separate institutional unit from its owner, it must have its own value added, saving, assets, liabilities, etc. It must be possible to identify and record any flows of income and capital that are deemed to take place between the quasi-corporation and its owner. The amount of income withdrawn from a quasi-corporation during a given accounting period is decided by the owner, such a withdrawal being equivalent to the payment of a dividend by a corporation to its shareholder(s). Given the amount of the income withdrawn, the saving of the quasi-corporation (that is, the amount of earnings retained within the quasi-corporation) is determined. A balance sheet is also needed for the quasi-corporation showing the values of its non-financial assets used in production and also the financial assets and liabilities owned or incurred in the name of the quasi-corporation.

5.51 Experience has shown that countries have difficulty treating unincorporated enterprises owned by households as quasi-corporations. However, it is not useful to introduce additional criteria, such as size, into the definition of quasi-corporations owned by households. If an enterprise is not in fact operated like a corporation and does not have a complete set of accounts of its own, it cannot and should not be treated as a quasi-corporation however large it may be.

5.52 A quasi-corporation is also identified when preliminary expenses, including for mining rights, license fees, site preparation, building permits, purchase taxes, local office expenses and lawyers' fees, are incurred by a non-resident unit, prior to establishing a legal entity. As a result of identifying a quasi-corporation in those cases, the preparatory expenses are recorded in the economy of the future operations as being resident-to-resident transactions that are funded by a (foreign) direct investment inflow. Because of the limited scale of these activities, the compilation of acceptable data for these enterprises is often feasible, despite the lack of incorporation. If the project does not subsequently go into operation, the value of the direct investment is eliminated by an entry in the other changes in the volume of assets or liabilities account.

Units with cross-border elements

Branches

5.53 When a non-resident unit has substantial operations over a significant period in an economic territory, but no

separate legal entity, a branch may be identified as an institutional unit. This unit is identified for statistical purposes because the operations have a strong connection to the location of operations in all ways other than incorporation.

5.54 An unincorporated enterprise abroad should be treated as a quasi-corporation when indications of substantial operations can be identified separately from the rest of the unit. As with other quasi-corporations, either a complete set of accounts, including a balance sheet of assets and liabilities, for the unit exists or it would be meaningful from an economic point of view to compile them. The availability of separate records indicates that an actual unit exists and makes it practical to prepare statistics. In addition, all or most of the following factors tend to be present for a branch to be recognized:

a. Production based in the territory is undertaken or intended for one year or more in a territory other than that of its head office:

- If the production process involves physical presence, then the operations should be physically located in that territory. Some indicators of an intention to locate in the territory include purchasing or renting business premises, acquiring capital equipment, and recruiting local staff.
- If the production does not involve physical presence, such as activities related to the ownership of patents, "virtual manufacturing", some cases of banking, insurance, or other financial services, the operations should be recognized as being in the territory by virtue of the registration or legal domicile of those operations in that territory.

b. The operations are recognized as being subject to the income tax system, if any, of the economy in which it is located even if it may have a tax-exempt status.

5.55 The identification of branches has implications for the statistical reporting of both the parent and branch. The operations of the branch should be excluded from its head office in the home territory and the delineation of parent and branch should be made consistently in both of the affected economies. Each branch, as described in the above paragraphs, is a (foreign) direct investment enterprise. Branches most commonly arise for financial and non-financial corporations, but it is also possible that households, non-profit institutions serving households (NPISHs), or governments (when government operations do not have diplomatic immunity) have branches.

Construction projects

5.56 Some construction projects undertaken by a non-resident contractor may give rise to a branch, to be recognized as a (foreign) direct investment enterprise. Construction may be carried out or managed by a non-resident enterprise, without the creation of a local legal entity:

a. For major projects (such as bridges, dams, power stations) that take a year or more to complete and that are managed through a local site office, the operations would usually satisfy the criteria for identification of a branch in paragraphs 5.53 and 5.54, and so would not be classified as international trade in services;

b. In other cases, the construction operations may not satisfy the conditions for recognition as a branch, for example, for a short-term project or one undertaken from the home territory rather than from a local office. In those cases, the work provided to customers resident in the territory of those operations is classified as international trade in construction and included in services (i.e., an export of services by the home base and an import of services by the territory of operations).

Production delivered from a base

5.57 Activities such as consulting, maintenance, training, technical assistance, and health care may be provided by a branch or from a home base. If operations are substantial enough to satisfy the criteria given in paragraphs 5.53 and 5.54, a branch would be recognized as a (foreign) direct investment enterprise. On the other hand, if a branch is not recognized in the territory, the operations will give rise to international trade in services. The residence of units providing services in this way is discussed in paragraph 5.271.

5.58 Mobile equipment, such as ships, aircraft, drilling platforms, and railway rolling stock, may operate across more than one economic territory. The criteria for recognition of a branch also apply in these cases. That is, if the operations in a territory outside the home base are substantial enough, they meet the definition of a branch. For example, a secondary base for servicing the fleet with long-term presence and its own accounts may satisfy the definition of a branch. If they do not satisfy the definition of a branch, the activities of the ship-operating enterprise are included in the economy where the operator is resident.

5.59 Similarly to mobile equipment, a multi-territory pipeline that passes through a territory, but is not operated by a separate legal entity in that territory, would be recognized as constituting a branch if there is a substantial presence, availability of separate accounts, and so on. In cases in which such operations are not separate institutional units, there may be payment of rent to a notional unit owning the land or a long-term lease of land, of the kind discussed in paragraphs 5.61 and 5.62; or there may be a multi-territory enterprise of the type discussed in paragraphs 5.68 to 5.71.

5.60 When a branch is identified, there are (foreign) direct investment inflows to the territory, but the provision of goods or services to customers in that territory is a resident-to-resident transaction. In contrast, if the operations are not substantial enough to qualify as a branch, the provision of goods or services to customers in that territory are imports of that territory.

Notional resident units for land and other natural resources, and buildings and structures owned by non-residents

5.61 Immovable assets such as land and other natural resources, and buildings and structures are treated as being owned by resident units. If the legal owner is actually non-resident, an artificial unit, called a notional resident unit, is created for statistical purposes. The notional resident unit is recorded as owning the asset and receiving the rent or rentals that accrue to the asset. The legal owner owns the equity in the notional resident unit and then receives income from the notional resident unit in the form of property income paid abroad. This treatment is designed so that the relevant non-financial assets are always assets of the economy in whose territory they are located. Otherwise, the land would appear in another economy's national balance sheet. The only exception is made for land and buildings in extraterritorial enclaves of foreign governments (such as embassies, consulates and military bases) that are subject to the laws of the home territory and not those of the territory where they are physically situated.

5.62 A non-resident with a natural resource lease is classified as incurring rent and no notional unit is automatically created. However, it is usually the case that ownership of land and other natural resources such as mineral and energy resources, non-cultivated biological resources, water resources, and rights to use these assets through a lease or other permit over long periods are associated with a branch. In addition, preliminary expenses for a unit to be incorporated in the future are to be regarded as a notional (foreign) direct investment enterprise.

5.63 The operations of notional resident units include holding the asset, paying any associated expenses (such as insurance, repairs, and taxes), collecting rent or rental on the asset, and any other transactions associated with those functions. If the non-resident owner uses the property, the notional resident unit generates rent (in the case of land and so on, or rental (for buildings or other structures) in kind to its owner. The corresponding entry to the rent or rental would be income payable to the owner by the notional resident unit. The notional resident unit should also be treated as incurring expenses and taxes; payments by the non-resident owner to meet a loss arising from these costs therefore would be recorded as direct investment flows from the owner to the notional resident unit. Other transactions of the owner would not be attributed to the notional resident unit, for example, any borrowing or debt service. As a result of the limited nature of notional resident units, compiling acceptable estimates for their operations is generally feasible when they are significant.

5.64 When the ownership of land and other natural resources is associated with substantial operations, so that the requirements in paragraphs 5.53 and 5.54 are met, a branch is identified. In such cases, a notional resident unit is not identified because the branch already exists as a resident owner.

5.65 The notional resident unit that owns land or other natural resources may be contrasted with a branch, which has a full set of accounts. An example is a non-resident fishing operator having a 10-year fishing license for the waters of a territory. If the operator has a base in the territory, keeps separate records, and so on, then a

branch is identified, and its accounts will show sales of fish and other transactions. Another example could be a commercial farm owned by a non-resident unit. In contrast, the only activity of a notional unit will be the supply of rent or rental services arising from the ownership of property. However, in the case that a non-resident fishing operator does not have a base in the economy in which the fishery is located, the relevant output (i.e., fish catch) and related inputs are recorded in the economy of residence of the fishing operator.

5.66 When several partners own land, there may be a quasi-corporation, by virtue of the management of the land being separate from that of its individual owners. In that case, for statistical purposes, the non-resident partners would own a share in the quasi-corporation, so there would be no need to identify an additional notional resident unit.

5.67 Some kinds of time-share accommodation arrangements may also give rise to a notional resident unit. For example, the acquisition of deeded ownership, or a similar arrangement, is equivalent to the establishment of a notional resident unit.

Multi-territory enterprises

5.68 Some enterprises may operate as a seamless operation over more than one economic territory. Although the enterprise has substantial activity in more than one economic territory, it is run as an indivisible operation with no separate accounts or decisions, so that no separate branches can be identified. Such enterprises may have operations including shipping lines, airlines, hydroelectric schemes on border rivers, pipelines, bridges, tunnels, and undersea cables. Some NPISHs also may operate in this way.

5.69 Governments usually require separate units or branches to be identified in each economic territory for more convenient regulation and taxation. Multi-territory enterprises may be exempted from such requirements, but there may be arrangements, such as a formula for payment of taxation to the respective authorities.

5.70 In the case of a multi-territory enterprise, it is preferable that separate institutional units be identified for each economy. If that is not feasible because the operation is so seamless that separate accounts cannot be developed, it is necessary to prorate the total operations of the enterprise into the individual economic territories. The factor used for prorating should be based on available information that reflects the contributions to actual operations. For example, equity shares, equal splits, or splits based on operational factors such as tonnages or wages could be considered. Where taxation authorities have accepted the multi-territory arrangements, a prorating formula may have been determined, which should be the starting point for statistical purposes. Although the situation is somewhat different from the case of joint administration or sovereignty zones, the solution of prorating may be the same.

5.71 The proration of the enterprise means that all transactions need to be split into each component economic territory. The treatment may be quite complex to implement. This treatment has implications for other statistics and its implementation should always be coordinated for consistency. Compilers in each of the territories involved are encouraged to cooperate to develop consistent data, avoid gaps, and minimize respondent and compilation burden, as well as assist counterparties to report bilateral data on a consistent basis.

2. Special cases

Groups of corporations

5.72 Large groups of corporations, or conglomerates, may be created whereby a parent corporation controls several subsidiaries, some of which may control subsidiaries of their own, and so on. For certain purposes, it may be desirable to have information relating to a group of corporations as a whole. However, each individual corporation should be treated as a separate institutional unit, whether or not it forms part of a group. Even subsidiaries that are wholly owned by other corporations are separate legal entities that are required by law and the tax authorities to produce complete sets of accounts, including balance sheets. Although the management of a subsidiary corporation may be subject to the control of another corporation, it remains

responsible and accountable for the conduct of its own production activities.

5.73 Another reason for not treating groups of corporations as single institutional units is that groups are not always well defined, stable or easily identified in practice. It may be difficult to obtain data for groups whose activities are not closely integrated. Moreover, many conglomerates are much too large and heterogeneous for them to be treated as single units, and their size and composition may be continually shifting over time as a result of mergers and takeovers.

Joint Ventures

5.74 A joint venture involves the establishment of a corporation, partnership or other institutional unit in which each party legally has joint control over the activities of the unit. The units operate in the same way as other units except that a legal arrangement between the parties establishes joint control over the unit. As an institutional unit, the joint venture may enter into contracts in its own name and raise finance for its own purposes. A joint venture maintains its own accounting records. Joint ventures are typically established for the purpose of executing a business undertaking in which the parties agree to share in the profits and losses of the enterprise as well as the capital formation and contribution of operating inputs or costs. Generally, there is no intention of a continuing relationship beyond the original purpose.

5.75 Whether a quasi-corporation is identified for the joint venture without a separate legal status depends on the arrangements of the parties and legal requirements. The joint venture is a quasi-corporation if it meets the requirements for an institutional unit, particularly by having its own records. Otherwise, if each of the operations are effectively undertaken by the partners individually, then the joint venture is not an institutional unit and the operations would be seen as being undertaken by the joint venture partners separately. If foreign investment is involved in such cases, there would usually be (foreign) direct investment enterprises that undertake the joint venture operations of each of the partners.

Head offices and holding companies

5.76 Two quite different types of units exist that are both often referred to as holding companies. The first is the head office that exercises some aspects of managerial control over its subsidiaries. These may sometimes have noticeably fewer employees, and more at a senior level, than its subsidiaries but it is actively engaged in production. These types of activities are described in *ISIC Rev.5* in section N class 7010 as follows:

This class includes: the overseeing and managing of other units of the enterprise or enterprise group i.e. acting as head office; undertaking the strategic or organisational planning and decision making role of the company or enterprise; exercising operational control and managing the day-to-day operations of their related units. These activities are the same regardless of which activities the managed units perform (financing, manufacturing trade, etc..

Such units are allocated to the non-financial corporations' sector unless all or most of their subsidiaries are financial corporations, in which case they are treated by convention as financial auxiliaries in the financial corporations' sector.

5.77 The type of unit properly called a holding company is a unit that holds the assets of subsidiary corporations but does not undertake any management activities. They are described in *ISIC Rev.5* in section L class 6421 as follows:

This class includes the activities of holding companies, i.e. units that hold the assets (owning controlling-levels of equity) of one or more subsidiaries and whose only purpose is owning subsidiaries. The holding companies in this class do not provide any other service to the enterprises in which the equity is held, i.e. they do not administer or manage other units.

Such units are always allocated to the financial corporations' sector and treated as captive financial institutions even if all the subsidiary corporations are non-financial corporations.

5.78 To distinguish head offices and holding companies from other institutional units, information on the structure of the balance sheets could be used practically to identify head offices and holding companies as units having

at least 50 per cent of their assets consisting of equity vis-à-vis their subsidiaries.

5.79 A strict definition of holding companies (in the sense that holding companies do not provide any management services) should be used when classifying institutional units as holding companies. For units where information on variables like management control is not available, or only available at great cost in practice, it is recommended to base the distinction between head offices and holding companies on an employment criterion, as follows:

- Head offices are actively engaged in production, although they may have noticeably fewer employees, and more at a senior level, than its subsidiaries. However, having zero employment is a clear indication that a unit is not a head office.
- On the other hand, holding companies simply holding assets may do this with very few or without any employed personnel.
- Employment thresholds for the delineation between head offices and holding companies should be determined taking into account national circumstances. In particular, national legislative requirements for the number of employees of holding companies should be taken into account. As a general indication, employment of three or more persons, or employment exceeding the national legal minimum employment, is a first indicator for a unit being a head office.

5.80 To determine the institutional independence of head offices and holding companies, the following principles apply:

- The standard criteria for an institutional unit should always be applied – thus also for head offices and holding companies.
- Head offices are always to be considered as separate institutional units.
- Holding companies owned by non-residents are always to be considered institutional units.
- Holding companies that have multiple parents or shareholders is a sufficient qualification for a unit being an institutional unit.
- For holding companies wholly owned by a single resident unit, "no employees and no remuneration of employees" is not a sufficient criterion to conclude that there is a lack of institutional independence; however, it can be used as an indicator to consider units for further investigation regarding their lack of independence.

Other special cases

Special purpose entities

5.81 A number of institutional units may be described as special purpose entities (SPEs). In macroeconomic statistics, the term SPEs is used exclusively for institutional units which align to the following definition:

a. An SPE, resident in an economy, is a formally registered and/or incorporated legal entity recognized as an institutional unit, with no or little employment up to maximum of five employees, no or little physical presence, and no or little physical production in the host economy;

b. SPEs are directly or indirectly controlled by non-residents;

c. SPEs are established to obtain specific advantages provided by the host jurisdiction with an objective to (i) grant its owner(s) access to capital markets or sophisticated financial services, and/or (ii) isolate owner(s) from financial risks, and/or (iii) reduce regulatory and tax burden, and/or (iv) safeguard confidentiality of their transactions and owner(s);

d. SPEs transact almost entirely with non-residents and a large part of their financial balance sheet typically consists of cross-border claims and liabilities.

Special purpose units established by non-resident government units (see paragraphs 5.94 to 5.96) are excluded from this definition.

5.82 Some institutional units incorporated in the same economic territory as their parents may satisfy all the above criteria, with the exception that they are not directly or indirectly controlled by non-resident parents. Such "special purpose units" or "special purpose vehicles" are sometimes referred to as special purpose entities as well. These units are typically consolidated with their resident parents, because they lack autonomy of decision. In the case that they operate autonomously and can be considered as separate institutional units (e.g., some securitization vehicles), they should not be consolidated with their resident parents. However, these latter units are not considered as part of SPEs. The term special purpose units/vehicles is used to denote those owned by non-resident parents as well as those owned by resident parents.

5.83 For countries where the presence of SPEs is significant, a separate identification of SPEs, as an of which item, is recommended as supplementary information.

5.84 Whether a unit has all or none of the characteristics described in paragraph 5.81 (a-d), and whether it is described as a special purpose unit (see paragraph 5.82) or some similar designation or not, it is treated in macroeconomic statistics in the same way as any other institutional unit by being allocated to sector and industry according to its principal activity unless it falls into one of the three following categories:

a. Captive financial institutions;

b. Artificial subsidiaries of corporations;

c. Special purpose units of general government.

Each of these is described below. A list of the most common types of SPEs, including their (sub)sector classification, is presented in table 23.1 in chapter 23 on Globalization.

Captive financial institutions

5.85 A holding company that simply owns the assets of subsidiaries is one example of a captive financial institution. Other units that are also treated as captive financial institutions are units with the characteristics of SPEs as described above (not necessarily controlled by a non-resident parent), including some units used for holding and managing wealth for individuals or families, holding assets for securitization, raising or borrowing funds on behalf of related companies (such a company may be called a conduit), intra group lending companies, captive factoring and invoicing companies, captive financial leasing companies, etc.

5.86 The degree of independence from its parent may be demonstrated by exercising some substantive control over its assets and liabilities to the extent of carrying the risks and reaping the rewards associated with the assets and liabilities. Such units are classified in the financial corporations' sector.

5.87 A unit of this type that cannot act independently of its parent and is simply a passive holder of assets and liabilities (sometimes described as being on auto-pilot) is not treated as a separate institutional unit unless it is resident in an economy different from that of its parent. If it is resident in the same economy as its parent, it is treated as an "artificial subsidiary" as described immediately below.

5.88 More guidance on the treatment of trusts and similar types of funds which hold and manage financial and non-financial assets on behalf of individuals or families is provided in paragraphs 5.97 to 5.105.

Artificial subsidiaries of corporations

5.89 Within the sequence of economic accounts of the SNA, *BPM* and other macroeconomic statistics, the term corporation is used to denote both those institutions legally recognized as corporations and other units treated in macroeconomic statistics as corporations, specifically quasi-corporations, branches and notional units. For the following four paragraphs, however, the term corporation is used in the sense of a corporation as a legal entity.

5.90 A subsidiary corporation, wholly owned by a parent corporation, may be created to provide services to the parent corporation, or other corporations in the same group, in order to avoid taxes, to minimize liabilities in the event of bankruptcy, or to secure other technical advantages under the tax or corporation legislation in force in a particular country. For example, the parent may create a subsidiary to which ownership of its land,

buildings or equipment is transferred and whose sole function is to lease them back again to the parent corporation; the subsidiary may be the nominal employer of all the staff who are then contracted to other corporations in the group, the subsidiary may keep the accounts and records of the parent on a separate computer installation; the role of the subsidiary may be established to take advantage of favourable funding or regulatory treatments and so on. In some cases, corporations may create "dormant" subsidiaries that are not actually engaged in any production but which may be activated at the convenience of the parent corporation.

5.91 In general, these sorts of corporations do not satisfy the definition of an institutional unit because they lack the ability to act independently from their parent corporation and may be subject to restrictions on their ability to hold or transact assets held on their balance sheets. Their level of output and the price they receive for it are determined by the parent that (possibly with other corporations in the same group) is their sole client. They are thus not treated as separate institutional units but are treated as an integral part of the parent and their accounts are consolidated with those of the parent. As noted above, the accounts for those units on auto-pilot are also consolidated with their parent corporation unless they are resident in an economy different from that where the parent is resident.

5.92 Quasi-corporations such as a partnership or trust may also be set up by a parent corporation for similar reasons to the subsidiary corporations just described. Within the sequence of economic accounts of the SNA, these are also treated as an integral part of the parent and their accounts are consolidated with the parent, unless they are resident in another country.

5.93 A distinction must be made between artificial subsidiaries as just described and a unit undertaking only ancillary activities. As described in more detail in section D of chapter 6 on Enterprises, establishments and industries, ancillary activities are limited in scope to the type of service functions that virtually all enterprises need to some extent or another such as cleaning premises, running the staff payroll or providing the information technology infrastructure for the enterprise. Units undertaking only ancillary activities will in general not satisfy the conditions of being an institutional unit (for the same sort of reason as artificial subsidiaries do not) but they may sometimes be treated as a separate establishment of the enterprise if this is analytically useful.

Special purpose units of general government

5.94 Governments may set up special purpose units, such as special purpose vehicles (SPVs) for financial convenience (special purpose units/vehicles are discussed in paragraph 5.82). For example, the special purpose unit may be involved in fiscal or quasi-fiscal activities (including securitization of assets, borrowing, etc.). Resident special purpose units that function only in a passive manner relative to general government and that carry out fiscal and quasi-fiscal activities do not satisfy the criteria to be institutional units and are therefore not treated as separate institutional units in macroeconomic statistics; they are treated as part of general government regardless of their legal status. Resident special purpose units acting independently, acquiring assets and incurring liabilities on their own behalf, accepting the associated risk, are treated as separate institutional units and are classified to a sector according to their principal activity.

5.95 Special purpose units that are resident in a different country (called SPEs following paragraph 5.81) than their controlling government are always classified as separate institutional units in the economy where they are established. When such units exist, care must be taken to reflect the fiscal activities of government accurately. All flows and positions between the general government unit and the SPEs should be recorded in the accounts for general government and the rest of the world when they occur.

5.96 A government may create a SPE to undertake government borrowing, incur government outlays, or collect revenue abroad for fiscal policy purposes. Even if there are no actual economic flows recorded between the government and the SPE related to these fiscal activities, flows and positions should be imputed in the accounts of both the government and the rest of the world to reflect the fiscal activities of the government undertaken by the SPE. (More detailed guidance is provided in chapter 30 on General government and the public sector.)

Trusts and similar types of funds

5.97 Trusts are arrangements whereby an economic agent (a trustee) holds property (but not economic ownership) as its nominal owner for the good of one or more beneficiaries. Their job is to hold, manage and administer the funds in the trust on behalf of the settlor (the creator of the trust). Their fiduciary duty as a trustee requires them to act in the best interest of the beneficiaries of the trust. The duties of a trustee are laid out upon the creation of the trust, and while they may differ depending on the situation, some tasks are common. The trustee oversees the distribution of the trust's funds to the beneficiaries. While the assets remain a part of the trust, the trustee is responsible for any investments that are made, ensuring any assets included in the trust, taking care of the administration, and overseeing the payment of taxes.

5.98 Several kinds of trustees, and accordingly trusts, can be distinguished:

- Charitable trustees manage funds left in a charitable trust and follow the instructions left by the creator of the trust;
- Investment trustees manage the day-to-day operations of an investment account, helping it to grow over time;
- Successor trustees are people who step in to manage a trust when the person who created the trust is unable to do so (through death or incapacitation);
- Corporate trustees work with large firms that manage trusts for clients that pay them (other types of trustees are not always paid for their services like corporate trusts are); and
- Bankruptcy trustees step in when a person or business declares bankruptcy and their assets need to be administered.

5.99 Looking more specifically at these trusts set up by households, the trustee is not the economic owner of the assets. The trustee may be the legal owner of the assets, but the accumulated assets in the trust constitute a separate fund and are not part of the trustee's own assets, indicating that economic ownership is different from nominal/legal ownership. The main responsibilities of the trustee are to manage and administer the assets of the trust for the benefit of the beneficiaries. As such, they are typically not exposed to the risks and the rewards of the accumulated assets. On the other hand, the trust itself does not constitute a legal entity per se, although it is often considered as a separate unit.

5.100 The standard criteria for an institutional unit should be applied for treating a trust, or a similar type of fund, which is resident in the same economy as its beneficiaries. On the other hand, in cases where the family trust, or a similar type of fund, is resident in another economy than its beneficiaries, it is always treated as a separate institutional unit. In practice, it may not be that easy and straightforward to apply the standard criteria to trusts which are resident in the same economy as their beneficiaries. Especially in relation to the concept of autonomy of decision, one may need to look for more pragmatic criteria to approximate this concept. One of these criteria is the allocation of risks and rewards. In the case the risks and rewards are run, for example, by the trustee, or fund manager, one may assume that the trust does not have any autonomy of decision and that the fund manager is actually a financial intermediary owning the fund. If the risks and rewards are instead allocated to the beneficiary/investor or beneficiaries/investors, one may also assume that the trust or fund does not have any autonomy of decision in the case of a single beneficiary who takes all the risks and rewards of the investment strategy. On the other hand, in the case of a trust or fund with multiple beneficiaries, the decision making process will be more complex. Decisions may be made by the trustee, as an auxiliary service to the ultimate beneficiaries/investors.

5.101 All in all, trusts and similar types of funds, should only be treated as separate institutional unit in the case that the trustee, or fund manager, is not exposed to the risks and the rewards, and instead the risks and rewards are assumed by multiple beneficiaries/investors. In the case of a single beneficiary/investor assuming the risks and rewards, the accumulated assets should be assigned to the sector of the beneficiary/investor. Trusts, or similar types of funds, with multiple beneficiaries/investors would generally be classified as captive financial institutions and moneylenders (1227), if the beneficiaries/investors are restricted to a particular group of units, and not open to the public at large. If they would be open to other beneficiaries/investors as well, the trust, or fund, can be considered as part of money market funds (S1223) or non-MMF investment funds (S1224). Non-resident trusts, or funds, with single beneficiaries/investors would always qualify as

captive financial institutions (S1227). A decision tree for the treatment of trusts and similar types of funds is presented in figure 5.2.

Figure 5.2: Illustrative allocation of trusts and similar types of funds

5.102 Government and public sector units may also create trusts. In such cases, government or public sector units may designate trustees which can be part, or not, of the public sector. When the risks and rewards remain with a government or public sector unit, then the trust should be classified within the public sector regardless of its legal form. Care should therefore be taken to analyse whether the government, directly or indirectly, is exposed to the risks and is the beneficiary of the rewards. In addition to the decision tree in figure 5.2, if the fund manager is not exposed to the risks and rewards of the accumulated assets of the fund and the investors/beneficiaries are all public sector units then it is most appropriate to consider government as the ultimate investor/beneficiary and consolidate the fund within the government sector rather than treat it as a public financial corporation.

5.103 The term trust is also often used to designate other kinds of corporate arrangements that are established following similar legal provisions. For example, family trusts are established to own corporations or to undertake business activities such as farms. Such trusts may qualify as a quasi-corporation, to be classified as a holding company in the subsector of captive financial institutions and money lenders (S1227), or as part of the non-financial corporations' sector. Regarding the question whether or not they constitute separate institutional units, the same criteria as the ones for establishing a quasi-corporation in the case of large unincorporated family enterprises can be applied, i.e., the availability of sufficient information to compile a complete set of accounts, and the point that it is operated as if it were a separate corporation, whose de facto relationship to its owner is that of a corporation to its shareholders; see paragraph 5.47.

5.104 The term trust is also used in the context of unit trusts or investment trusts. In this context, it refers to a type of investment fund where a trust structure is being used. The treatment of these trusts is similar to other types of investment funds.

5.105 Finally, pension schemes may be set up as collective trusts. An example relates to funded employee pension schemes. The treatment of these trust-type arrangements is similar to those of other pension schemes. (More

guidance on the treatment of pension schemes is provided in chapter 24 on Insurance and pensions.)

3. Ownership and control of corporations

5.106 Control and ownership are different concepts. The ownership of a listed corporation is diffused among the institutional units that own its shares in proportion to the shareholdings. It is possible for one single institutional unit, whether another corporation, a household or a government unit, to own all the equity or shares in a corporation but, in general, ownership of a listed corporation is diffused among several, possibly very many, institutional units. By contrast, control is defined as the ability to determine the general corporate policy of the corporation. The expression "general corporate policy" as used here is understood in a broad sense to mean the key financial and operating policies relating to the corporation's strategic objectives as a market producer.

5.107 A single institutional unit owning more than half of the shares, or equity, of a corporation is able to control its policy and operations by outvoting all other shareholders, if necessary. Similarly, a small organized group of shareholders whose combined ownership of shares exceeds 50 per cent of the total is able to control the corporation by acting in concert. There may be exceptional cases in which certain shareholders enjoy privileged voting rights, such as a "golden share" giving a right of veto, but in general an individual institutional unit or group of units owning more than half the voting shares of a corporation can exercise complete control by appointing directors of its own choice. The degree of autonomy exercised by the directors and managers of a corporation is, therefore, likely to vary considerably, depending upon the extent to which the ownership of its shares is concentrated in the hands of a small number of other institutional units, whether these are other corporations, households or government units. In general, institutional units do not have to be autonomous but they do have to be responsible and accountable for the decisions and actions they take.

5.108 Because many shareholders do not exercise their voting rights, a single shareholder, or small number of shareholders acting together, may be able to secure control over a corporation, even though they may hold considerably less than half of the total shares. When ownership of shares is widely diffused among a large number of shareholders, control may be secured by owning considerably less than half of the total shares.

5.109 However, it is not possible to stipulate a minimum shareholding below 50 per cent that will guarantee control in all cases. The minimum must vary depending upon the total number of shareholders, the distribution of shares among them, and the extent to which small shareholders take an active interest, etc. Therefore, in practice, private control (i.e., control by institutional units other than government units and public sector units) is determined to exist if an investor owns more than 50 percent of the voting power (typically by owning more than half of the equity) in a corporation. The control may be direct (through ownership of 50 percent or more voting power) or indirect (through ownership of corporations that in turn have control, since control can be passed down a chain of ownership as long as control exists at each stage of the chain). In the case of governments controlling corporations, a broader set of indicators for control may need to be taken into consideration; see paragraphs 5.115 to 5.119 below.

Subsidiary and associate corporations

5.110 It is common for corporations to own shares in other corporations, and certain interrelationships between corporations need to be specified for purposes of the sequence of economic accounts of the SNA.

Subsidiary corporations

5.111 Corporation B is said to be a subsidiary of corporation A when corporation A controls more than half of the shareholders' voting power (i.e., more than half of equity) in corporation B.

5.112 Corporation A may be described as the parent corporation in this situation. As the relationship of a parent corporation to a subsidiary is defined in terms of control rather than ownership, the relationship must be transitive: that is, if C is a subsidiary of B and B is a subsidiary of A, then C must also be a subsidiary of A. If A has a majority shareholding in B while B has a majority shareholding in C, A cannot also have a majority

shareholding in C. Nevertheless, A must be able to control C if it controls B. By analogy with families of persons, corporation B can be described as a first generation subsidiary of corporation A, and corporation C as a second generation subsidiary of A. Evidently, large families of corporations may be built up with any number of subsidiaries at each level or generation and also any number of generations. Very large families of corporations, described as conglomerates, are encountered in some countries. Conglomerates that include corporations resident in different countries are usually described as multinational enterprise groups.

Associate corporations

5.113 Corporation B is said to be an associate of corporation A when corporation A and its subsidiaries control between 10 per cent and 50 per cent of the shareholders' voting power in B so that A has some influence over the corporate policy and management of B.

5.114 By definition, a corporation is able to exert less influence over an associate corporation than over a subsidiary. Although some corporations may be able to exert considerable influence over their associates, this cannot be guaranteed. The relationship between associates is weaker than that between parent and subsidiary corporations, and groups of associates may not be well defined.

Government control of corporations

5.115 A corporation is a public corporation if a government unit, another public corporation, or some combination of government units and public corporations controls the unit, where control is defined as the ability to determine the general corporate policy of the corporation. The expression "general corporate policy" as used here is understood in a broad sense to mean the key financial and operating policies relating to the corporation's strategic objectives as a market producer.

5.116 Because governments exercise sovereign powers through legislation, regulations, orders and the like, care needs to be applied in determining whether the exercise of such powers amounts to a determination of the general corporate policy of a particular corporation and therefore control of the corporation. Laws and regulations applicable to all units as a class or to a particular industry should not be viewed as amounting to control of these units.

5.117 The ability to determine general corporate policy does not necessarily include the direct control of the day-to-day activities or operations of a particular corporation. The officers of such corporations would normally be expected to manage these in a manner consistent with and in support of the overall objectives of the particular corporation. Nor does the ability to determine the general corporate policy of a corporation include the direct control over any professional, technical or scientific judgments, as these would normally be viewed as part of the core competence of the corporation itself. For example, the professional or technical judgments exercised by a corporation set up to certify aircraft airworthiness would not be considered controlled in respect of individual approvals and disapprovals, though its broader operating and financial policies, including the airworthiness criteria, may well be determined by a government unit as part of the corporation's corporate policy.

5.118 Because the arrangements for the control of corporations can vary considerably, it is neither desirable nor feasible to prescribe a definitive list of factors to be taken into account. The following eight indicators, however, will normally be the most important and likely factors to consider:

a. *Ownership of the majority of the voting interest.* Owning a majority of shares will normally constitute control when decisions are made on a one-share one-vote basis. The shares may be held directly or indirectly, and the shares owned by all other public units should be aggregated. If decisions are not made on a one-share one-vote basis, the classification should be based on whether the shares owned by other public units provide a majority voice.

b. *Control of the board or other governing body.* The ability to appoint or remove a majority of the board or other governing body as a result of existing legislation, regulation, contractual, or other arrangements will likely constitute control. Even the right to veto proposed appointments can be seen as a form of control if it influences the choices that can be made. If another body is responsible

for appointing the directors, it is necessary to examine its composition for public influence. If a government appoints the first set of directors but does not control the appointment of replacement directors, the body would then be part of the public sector until the initial appointments had expired.

c. *Control of the appointment and removal of key personnel.* If control of the board or other governing body is weak, the appointment of key executives, such as the chief executive, chairperson and finance director, may be decisive. Non-executive directors may also be relevant if they sit on key committees such as the remuneration committee determining the pay of senior staff.

d. *Control of key committees of the unit.* Subcommittees of the board or other governing body could determine the key operating and financial policies of the unit. Majority public sector membership on these subcommittees could constitute control. Such membership can be established under the constitution or other enabling instrument of the corporation.

e. *Golden shares and options.* A government may own a "golden share," particularly in a corporation that has been privatized. In some cases, this share gives the government some residual rights to protect the interests of the public by, for example, preventing the company selling off some categories of assets or appointing a special director who has strong powers in certain circumstances. A golden share is not of itself indicative of control. If, however, the powers covered by the golden share do confer on the government the ability to determine the general corporate policy of the unit in particular circumstances, then the unit should be in the public sector from the date of existence of such circumstances. The existence of a share purchase option available to a government unit or a public corporation in certain circumstances may also be similar in concept to the golden share arrangement discussed above. It is necessary to consider whether, if the circumstance in which the option may be exercised exists, the volume of shares that may be purchased under the option and the consequences of such exercise means that the government has "the ability to determine the general corporate policy of the unit" by exercising that option. An unit's status in general should be based on the government's existing ability to determine corporate policy exercised under normal conditions rather than in exceptional economic or other circumstances such as wars, civil disorders or natural disasters.

f. *Regulation and control.* The borderline between regulation that applies to all units within a class or industry group and the control of an individual corporation can be difficult to judge. There are many examples of government involvement through regulation, particularly in areas such as monopolies and privatized utilities. It is possible for regulatory involvement to exist in important areas, such as in price setting, without the unit ceding control of its general corporate policy. Choosing to enter into or continue to operate in a highly regulated environment suggests that the unit is not subject to control. When regulation is so tight as to effectively dictate how the unit performs its business, then it could be a form of control. If a unit retains unilateral discretion as to whether it will take funding from, interact commercially with, or otherwise deal with a public sector unit, the unit has the ultimate ability to determine its own corporate policy and is not controlled by the public sector unit.

g. *Control by a dominant customer.* If all of the sales of a corporation are to a single public sector customer or a group of public sector customers, there is clear scope for dominant influence. The presence of a minority private sector customer usually implies an element of independent decision-making by the corporation so that the unit would not be considered controlled. In general, if there is clear evidence that the corporation could not choose to deal with non-public sector clients because of the public sector influence, then public control is implied.

h. *Control attached to borrowing from the government.* Lenders often impose controls as conditions of making loans. If the government imposed controls through lending or issuing guarantees that are more than would be typical when a healthy private sector unit borrows from a bank, control may be indicated. Similarly, control may be implied if only the government was prepared to lend.

5.119 Although a single indicator could be sufficient to establish control, in other cases, a number of separate indicators may collectively indicate control. A decision based on the totality of all indicators must necessarily be judgmental in nature but clearly similar judgements must be made in similar cases.

Control by a non-resident unit

5.120 In general, control is determined to exist through (i) an immediate (foreign) direct investment relationship where the direct investor owns more than 50 per cent of the voting power in the (foreign) direct investment corporation; or (ii) an indirect (foreign) direct investment relationship arising from the ownership of voting power in one direct investment corporation that owns voting power in another corporation(s) – indirectly through a chain of control.

5.121 It is important to distinguish between control and influence, In this respect, a distinction is made between corporations where over 50 per cent of the equity is held by a direct investor (and thus controlled) versus those corporations where between 10 and 50 per cent of the equity is held abroad (i.e., significant degree of influence). All corporations with non-resident holdings of 10 per cent or more are described as foreign direct investment enterprises and special treatment of their earnings is applied. Further details on this are given in chapter 8 on Earned income accounts and chapter 33 on Transactions and positions between residents and non-residents. It is important to note, however, that while all foreign-controlled corporations are foreign direct investment enterprises, some domestically controlled corporations may also be foreign direct investment enterprises. For example even a publicly controlled corporation may be a foreign direct investment enterprise if, in addition to government holding a controlling share of the equity, a further 10 per cent may be owned by a non-resident.

C. Non-profit institutions in macroeconomic statistics

5.122 ***Non-profit institutions are legal or social entities created for the purpose of producing goods and services, but whose status does not permit them to be a source of income, profit or other financial gain for the units that establish, control or finance them.*** In practice, their productive activities are bound to generate either surpluses or deficits but any surpluses they happen to make cannot be appropriated by other institutional units. The articles of association by which they are established are drawn up in such a way that the institutional units that control or manage them are not entitled to a share in any profits or other income they receive. For this reason, they are frequently exempted from various kinds of taxes.

5.123 NPIs may be created by households, corporations, or government but the motives leading to their creation are varied. For example, NPIs may be created to provide services for the benefit of the households or corporations who control or finance them; or they may be created for charitable, philanthropic or welfare reasons to provide goods or services to other persons in need; or they may be intended to provide health or education services for a fee, but not for profit; or they may be intended to promote the interests of pressure groups in business or politics; etc.

1. The characteristics of NPIs

5.124 The main features of NPIs may be summarized as follows:

a. Most NPIs are legal entities created by process of law whose existence is recognized independently of the persons, corporations or government units that establish, finance, control or manage them. The purpose of the NPI is usually stated in the articles of association or similar document drawn up at the time of its establishment. In some countries, especially developing countries, an NPI may be an informal unit whose existence is recognized by society but does not have any formal legal status; such NPIs may be created for the purpose of producing non-market goods or services for the benefit of individual households or groups of households.

b. Many NPIs are controlled by associations whose members have equal rights, including equal votes on all major decisions affecting the affairs of the NPI. Members enjoy limited liability with respect to the NPI's operations.

c. There are no shareholders with a claim on the profits or equity of the NPI. The members are not entitled to a share in any profits, or surplus, generated by the productive activities of the NPI, such profits being retained within the NPI.

d. The direction of an NPI is usually vested in a group of officers, executive committee or similar body elected by a simple majority vote of all the members. These officers are the counterpart of the board of directors of a corporation and are responsible for appointing any paid managers.

e. The term "non-profit institution" derives from the fact that the members of the association controlling the NPI are not permitted to gain financially from its operations and cannot appropriate any surplus that it may make. It does not imply that an NPI cannot make an operating surplus on its production.

5.125 In some countries NPIs are subject to preferential tax treatment, possibly to exemption from income tax, but this is not necessarily so and is not a determining factor in the identification of an NPI.

5.126 As in the case of producer units owned by government units, it is important to distinguish between NPIs engaged in market and non-market production as this affects the sector of the economy to which an NPI is allocated. NPIs do not necessarily engage in non-market production.

2. NPIs engaged in market production

5.127 Market producers are producers that sell most or all of their output at prices that are economically significant, that is, at prices that have a significant influence on the amounts the producers are willing to supply and on the amounts purchasers wish to buy. Schools, colleges, universities, clinics, hospitals, etc. constituted as NPIs are market producers when they charge fees that are based on their production costs and that are sufficiently high to have a significant influence on the demand for their services. Their production activities must generate an operating surplus or loss. Any surpluses they make must be retained within the institutions as their status prevents them from distributing them to others. On the other hand, because of their status as "non-profit institutions" they are also able to raise additional funds by appealing for donations from persons, corporations or government. In this way, they may be able to acquire assets that generate significant property income in addition to their revenues from fees, thereby enabling them to charge fees below average costs. However, they must continue to be treated as market producers so long as their fees are determined mainly by their costs of production and are high enough to have a significant impact on demand. Such NPIs are not charities, their real objective often being to provide educational, health or other services of a very high quality using their incomes from endowments merely to keep down somewhat the high fees they have to charge.

Market NPIs serving enterprises

5.128 Some market NPIs restrict their activities to serving a particular subset of other market producers. Most market NPIs serving enterprises are created by associations of the enterprises whose interests they are designed to promote. They consist of chambers of commerce, agricultural, manufacturing or trade associations, employers' organizations, research or testing laboratories or other organizations or institutes that engage in activities that are of common interest or benefit to the group of enterprises that control and finance them. The NPIs often engage in publicity on behalf of the group, lobby politicians or provide advice or assistance to individual members in difficulty for one reason or another. The NPIs are usually financed by contributions or subscriptions from the group of enterprises concerned. The subscriptions are treated not as transfers but as payments for services rendered and these NPIs are, therefore, classified as market producers. However, as explained below, when chambers of commerce or similar organizations intended for the benefit of enterprises are controlled by government units, they are classified as non-market NPIs and allocated to the general government sector.

3. NPIs engaged in non-market production

5.129 The majority of NPIs in most countries are non-market rather than market producers. Non-market producers are producers that provide most of their output to others free or at prices that are not economically significant. Thus, NPIs engaged mainly in non-market production may be distinguished not only by the fact that they are incapable of providing financial gain to the units that control or manage them, but also by the fact that they must rely principally on funds other than receipts from sales to cover their costs of production or other

activities. Their principal source of finance may be regular subscriptions paid by the members of the association that control them or transfers or donations from third parties, including government or from property income.

5.130 NPIs engaged mainly in non-market production are divided into two groups: those NPIs controlled by government and those that are not. The former are included in the general government sector. The latter are described as "non-profit institutions serving households" (NPISHs) and constitute a separate sector in macroeconomic statistics.

Government control of non-profit institutions

5.131 Control of an NPI is defined as the ability to determine the general policy or programme of the NPI. All NPIs allocated to the general government sector should retain their identity as NPIs in statistical records, to facilitate analysis of the complete set of NPIs. To determine if an NPI is controlled by the government, the following five indicators of control should be considered:

a. *The appointment of officers*. The government may have the right to appoint the officers managing the NPI either under the NPI's constitution, its articles of association or other enabling instrument.

b. *Other provisions of enabling instrument.* The enabling instrument may contain provisions other than the appointment of officers that effectively allow the government to determine significant aspects of the general policy or programme of the NPI. For example, the enabling instrument may specify or limit the functions, objectives and other operating aspects of the NPI, thus making the issue of managerial appointments less critical or even irrelevant. The enabling instrument may also give the government the right to remove key personnel or veto proposed appointments, require prior approval of budgets or financial arrangements by the government, or prevent the NPI from changing its constitution, dissolving itself, or terminating its relationship with government without government approval.

c. *Contractual agreements.* The existence of a contractual agreement between a government and an NPI may allow the government to determine key aspects of the NPI's general policy or programme. As long as the NPI is ultimately able to determine its policy or programme to a significant extent, such as by being able to renege on the contractual agreement and accept the consequences, by being able to change its constitution or dissolve itself without requiring government approval other than that required under the general regulations, then it would not be considered controlled by government.

d. *Degree of financing.* An NPI that is mainly financed by government may be controlled by that government. Generally, if the NPI remains able to determine its policy or programme to a significant extent along the lines mentioned in the previous indicator, then it would not be considered controlled by government.

e. *Risk exposure.* If a government openly allows itself to be exposed to all, or a large proportion of, the financial risks associated with an NPI's activities, then the arrangement constitutes control. The criteria are the same as in the previous two indicators.

5.132 A single indicator could be sufficient to establish control in some cases, but in other cases, a number of separate indicators may collectively indicate control. A decision based on the totality of all indicators will necessarily be judgmental in nature.

NPIs serving households (NPISHs)

5.133 ***Non-profit institutions serving households (NPISHs) (S15) consist of non-profit institutions principally engaged in the production of non-market services, which are not controlled by government.*** They provide goods and services to households free or at prices that are not economically significant. Most of these goods and services represent individual consumption but it is possible for NPISHs to provide collective services.

D. The non-financial corporations' sector and its subsectors

5.134 ***Non-financial corporations (S11) are institutional units whose principal activity is the production of market goods or non-financial services***. The non-financial corporations' sector is composed of the following set of resident institutional units:

a. All resident non-financial corporations (as understood in the sequence of economic accounts of the SNA, the *BPM* and other macroeconomic statistics and not just restricted to legally constituted corporations), regardless of the residence of their shareholders;

b. The branches of non-resident enterprises that are engaged in production of market goods or non-financial services on the economic territory on a long-term basis;

c. All resident NPIs that are producers of market goods or non-financial services.

5.135 Sectors are groups of institutional units, and the whole of each institutional unit must be classified to one or another sector even though that unit may be engaged in more than one type of economic activity. Some non-financial corporations or quasi-corporations may have secondary financial activities: for example, producers or retailers of goods may provide consumer credit directly to their own customers, which may also relate to "buy now pay later" type of arrangements. As explained more fully below, such corporations or quasi-corporations are nevertheless classified as belonging in their entirety to the non-financial corporate sector provided their principal activity is non-financial.

5.136 Two classification criteria are used to subsector the non-financial corporations' sector. One criterion is to show NPIs separately from other units in the sector. These units other than NPIs may be described as for profit institutions (FPIs). The second criterion is that of control to show:

a. Public non-financial corporations (S1111)

   Of which: public corporations which are part of a domestic multinational enterprise group (S1111ow)

b. National private non-financial corporations (S1112)

   Of which: national private corporations which are part of a domestic multinational enterprise group (S1112ow)

   and

c. Foreign-controlled non-financial corporations (S1113)

   Of which: Special purpose entities (SPEs) (S1113ow).

5.137 The criteria for control of corporations and NPIs by government and non-resident units are described in detail in section B. Corporations controlled by non-resident units are described as being foreign-controlled.

5.138 The full sub-sectoring of the non-financial corporations' sector can be seen as a two-way table as shown in table 5.2. The exact form of presentation of the subsectors will depend on both analytical and statistical considerations. It may be that the number of NPIs is such that some control categories are empty or sufficiently sparse that the detail cannot be shown for reasons of confidentiality. At the least, it is recommended to compile data for the left-most column based on control, to monitor the impact of globalization on the generation and distribution of income, and on the accumulation of assets and liabilities. It is also considered useful to distinguish, as supplementary items, the entries for the bottom row of table 5.2.

Table 5.2: Subsectors of the non-financial corporations' sector

Non-financial corporations	FPIs	NPIs
Public non-financial corporations	Public non-financial FPIs	Public non-financial NPIs
Of which: Part of a domestic multinational enterprise group		
Private non-financial corporations	Private non-financial FPIs	Private non-financial NPIs
Of which: Part of a domestic multinational enterprise group		
Foreign-controlled non-financial corporations	Foreign-controlled non-financial FPIs	Foreign-controlled non-financial NPIs
Of which: Special purpose entities (SPEs)		
Total non-financial corporations	Total non-financial FPIs	Total non-financial NPIs

E. The financial corporations' sector and its subsectors

5.139 ***Financial corporations (S12) consist of all institutional units whose principal activity is the production of financial services***. In addition, due to its important role in the financial system, the central bank, although predominantly producing non-market services for the society as a whole, is also treated as a financial corporation. The financial corporations' sector is composed of the following set of resident institutional units:

a. All resident financial corporations (as understood in the sequence of economic accounts of the SNA, the *BPM* and other macroeconomic statistics and not just restricted to legally constituted corporations), regardless of the residence of their shareholders;

b. The branches of non-resident corporations that are engaged in financial activity on the economic territory on a long-term basis;

c. All resident NPIs that are market producers of financial services.

5.140 Apart from the collective non-market services produced by the central bank, the production of financial services is the result of financial intermediation, financial risk management, liquidity transformation or auxiliary financial activities. Because the provision of financial services is typically subject to strict regulation, it is usually the case that units providing financial services do not produce other goods and services and financial services are not provided as secondary production.

5.141 One form of financial innovation has seen a substantial growth in activity of a kind traditionally carried out by, or through, financial corporations but that may also be done directly by non-financial enterprises themselves. For example, there is a tendency in some countries for producers or retailers of goods to provide consumer credit directly to their customers, which may also include "buy now pay later" type of arrangements. Another example is the tendency for non-financial enterprises in some countries to raise funds themselves by selling their own obligations directly on the money or capital markets. However, the enterprise as a whole must continue to be classified as non-financial corporation provided that:

a. A non-financial enterprise does not create a new institutional unit, such as a subsidiary corporation, to carry out the financial activity; and

b. The financial activity remains secondary to the principal activity of the enterprise.

5.142 The same principle applies to the sub-sectoring of financial corporations. For example, many deposit-taking corporations also engage in financial auxiliary services. However, as a single institutional unit, the commercial bank as a whole, including its financial auxiliary type of activities, is classified in the subsector "deposit-taking corporations except the central bank". For the same reason, central bank or monetary authority-type functions carried out by agencies within the central government that are not separate institutional units from government are not allocated to the central bank subsector. This is discussed further in section F and in chapter 30 on General government and the public sector.

5.143 The financial corporations' sector is divided into nine subsectors in the sequence of economic accounts of

the SNA, according to its activity in the market and the liquidity of its liabilities. These nine subsectors are shown in table 5.1, and each is described later in this section.

5.144 As well as being sub-sectored according to the nature of the financial activity being undertaken, the financial corporations' sector can also be sub-sectored in the same manner as the non-financial corporations' sector to show which units are subject to public control (including, as an of which item, those which are part of a domestic multinational enterprise group), which are national private corporations (including, as an of which items, those which are part of a domestic multinational enterprise group), and which are foreign-controlled. In addition, each of these subsectors could be broken down further, to show the difference between NPIs and FPIs. Thus in principle each of the rows in table 5.2 may be further disaggregated in line with the classification of financial corporations according to activity and liquidity of liabilities, as presented in table 5.1, though it is unlikely that all possible cross-classifications exist and a compressed sub-sectoring based on local circumstance and particular analytical interest may be sufficient. In this respect, it is recommended, however, to have a breakdown of the financial corporations' sector as a whole into the subsectors based on control.

5.145 The recommended breakdown according to the nature of financial activity may not be sufficient to capture new developments in the financial world, in particular the expansion of financial institutions involved in non-bank financial intermediation. For this reason, further breakdowns of the subsectors of the financial corporations' sector, as well as further details for a number of financial instruments, are encouraged as supplementary items. This is discussed further in chapter 29 on Financial corporations.

5.146 "Fintech" refers to technology-enabled innovation in financial services that could result in new business models, applications, processes, or products with an associated material effect on the provision of financial services. Countries where these activities are significant are encouraged to compile further breakdowns of relevant subsectors, as supplementary items. This is discussed further in chapter 22 on Digitalization. In external accounts, identification of "of which" category for fintech companies within the subsector classification is recommended.

1. Central bank

5.147 ***The central bank (S1221) is the financial institution (or institutions) that exercises control over key aspects of the financial system. Their principal functions generally include conducting monetary policy, including by issuing currency and regulating money supply and credit; managing international reserves and the payments system; promoting financial stability, including regulation and macroprudential supervision; and acting as banker to government***. In general, the following financial institutions are classified in this subsector:

a. The national central bank, including where it is part of a system of central banks, which in most economies are separately identifiable institutions that are subject to varying degrees of government control, engage in differing sets of activities, and are designated by various names (e.g., central bank, reserve bank, national bank, or state bank).

b. Currency boards or independent currency authorities that issue national currency that is fully backed by international reserves.

c. Central monetary agencies of essentially public origin (for example, agencies managing international reserves or issuing bank notes and coins) that keep a complete set of accounts but are not classified as part of central government.

d. National agencies, including notional resident units, of centralized currency unions. (More details on the recording of transactions and positions of these units are provided in section I.)

As long as the central bank is a separate institutional unit, it is always allocated to the financial corporations' sector even if it is primarily a non-market producer.

5.148 If an institutional unit is mainly engaged in central banking activities, the entire unit is classified in the central bank subsector. Many central banks regulate and/or supervise other deposit-taking corporations and sometimes also other financial corporations, and these central bank activities are also included in the central

bank subsector. However, if such activities are performed by a separate institutional unit, or units, that are affiliated with the government or with other sectors and if they are mainly engaged in regulating or supervising financial units, they are classified as financial auxiliaries rather than as units in the central bank subsector.

5.149 A few economies do not have central banks. Typical central banking activities that are performed by general government and cannot be separated into specific institutional units are treated as part of general government and are not allocated to the central bank subsector.

5.150 In economies in which some central banking functions are performed wholly or partly outside the central bank, particularly holding reserve assets, consideration should be given to compiling supplementary data for the monetary authorities.

2. Deposit-taking corporations except the central bank

5.151 ***Deposit-taking corporations except the central bank (S1222) are institutional units principally engaged in financial intermediation, whose business is to receive deposits and/or close substitutes for deposits from institutional units, and, on their own account, to extend credit and/or to make investments in other financial instruments.*** The liabilities of deposit-taking corporations are typically included in measures of money broadly defined.

5.152 In general, the following financial intermediaries are classified in this subsector:

a. Commercial banks, "universal" banks, "all-purpose" banks;

b. Savings banks (including trustee savings banks and savings and loan associations);

c. Post office giro institutions, post banks, giro banks;

d. Rural credit banks, agricultural credit banks;

e. Cooperative credit banks, credit unions;

f. Electronic money institutions with liabilities part of broad money;

g. Specialized banks or other financial corporations if they take deposits or issue close substitutes for deposits;

h. Traveler's check companies that mainly engage in financial intermediation; and

i. Offshore banks which are incorporated or registered in the country.

5.153 The liabilities of deposit-taking corporations to residents are typically included in measures of broad money. The money-issuing subsectors may be identified on a supplementary basis to assist in reconciliation with monetary data. It consists of the central bank plus deposit-taking corporations plus other institutions that issue liabilities included in the definition of broad money (e.g., money market funds). For the definition of broad money and financial instruments included in it, reference is made to chapter 6, section B of the *MFSMCG 2016*.

5.154 Electronic money institutions are units authorized to issue electronic money, which is a payment instrument whereby monetary value is electronically stored on a physical device or remotely at a server. They should be classified as deposit-taking corporations, if they are a financial corporation and if the electronic money issued is included in broad money. Electronic money can usually be used for payments to third parties and is, therefore, a close substitute for transferable deposits. Monetary value stored on specific prepaid instruments does not represent electronic money if the instruments are designed to address specific needs only and can be used only in a limited way.

3. Money market funds (MMFs)

5.155 ***Money market funds (MMFs) (S1223) are collective investment schemes that raise funds by issuing shares or units to the public, and primarily investing in money market instruments, money market fund shares***

or units, transferable debt instruments with a residual maturity of not more than one year, bank deposits and instruments that pursue a rate of return that approaches the interest rates of money market instruments. MMF shares can often be transferred by cheque or other means of direct third-party payment. Because of the nature of the instruments the schemes invest in, their shares or units may be regarded as close substitutes for deposits.

5.156 Unit trusts or investment trusts primarily investing in similar instruments as the ones referred to in the above paragraph are also classified as money market funds, unless the investors are restricted to a particular group of units. Corporations taking care of the management and administration of MMFs are generally classified as financial auxiliaries.

4. Non-MMF investment funds

5.157 ***Non-MMF investment funds (S1224) are collective investment schemes that raise funds by issuing shares or units to the public, and investing, on their own account, predominantly in longer-term financial assets, such as equity shares, bonds, mortgage loans, and non-financial assets***. Investment fund shares or units are generally not close substitutes for deposits. They are not transferable by means of cheque or direct third-party payments. Investment funds can be open-ended or closed-ended. Open-ended funds or open funds are those whose shares or units are, at the request of the holders, repurchased or redeemed directly or indirectly out of the undertaking's assets. Closed-ended funds or closed funds are open for subscription only during a specified period at the launch of the scheme; thereafter investors can acquire shares only by buying them on a secondary market (directly or sometimes even on an exchange) from other investors. Closed-ended investment funds issue a limited number of shares or units. New shares or units are rarely issued once the fund has been launched. Investment funds may be constituted as follows: (a) under the law of contract (as common funds managed by management companies), (b) under trust law (as unit trusts), (c) under a statute (as investment companies), or (d) otherwise with similar effect. Fund managers of investment funds are generally classified as financial auxiliaries (see paragraphs 5.168 to 5.170).

5.158 Hedge funds are a kind of investment fund. Hedge fund is a term that covers a heterogeneous range of collective investment schemes, typically involving high minimum investments, light regulation, and a wide range of investment strategies, via leverage.

5.159 In the case that special purpose government funds, usually called sovereign wealth funds, can be considered as separate institutional units, they are more likely to be classified as captive financial institutions (see paragraphs 5.171 and 5.172). The same holds for trusts set up to manage wealth of a limited group of beneficiaries (see paragraph 5.101).

5.160 Unit trusts or investment trusts primarily investing in similar instruments as the ones referred to in paragraph 5.157 are also classified as non-MMF investment funds, unless the investors are restricted to a particular group of units. Corporations taking care of the management and administration of MMFs are generally classified as financial auxiliaries.

5.161 In relation to investments in non-financial assets, funds that own, and rent out, dwellings and/or commercial property, are considered as providers of rental and other types of real estate services, and not as providers of financial services. As providers of non-financial services, they are classified in the non-financial corporations' sector, and not as financial corporations (i.e., non-MMF investment funds). On the other hand, investment funds that primarily invest in debt and equity instruments in companies that own, and rent out, dwellings and/or commercial property would qualify as non-MMF investment funds. This also holds for investment funds that directly invest in real estate in other economies, in which case the investments are recorded as investments in equity of notional non-resident units. In the case of hybrid real estate investment funds, the units would need to be classified according to their principal activity, i.e., the activity which accounts for most of the value added. As value added from real estate activities is typically much larger than the fees related to investments in financial instruments, even though most administration and maintenance services may be outsourced to specialized units, these hybrid funds will typically end up in the non-financial corporations' sector.

5.162 Investment funds that directly invest in other non-financial assets, such as some crypto assets, gold and other valuable metals, or high-end wines and whiskies, are classified as non-MMF investment funds, because the

main part of their returns on the invested assets will relate to holding gains, and does not consist of the production of non-financial services.

5.163 In the case of fund-of-funds, i.e., investment funds only investing in other funds, a distinction should be made between "fettered" fund-of-funds, which only invest in funds that are managed and administered by the same management company, versus "non-fettered" funds, which invest in any fund, even those managed by competing companies. In the latter case, the relevant funds should be treated as separate institutional units. In the former case, the fund-of-funds and the individual funds would typically share the same management company, which is to be classified in subsector financial auxiliaries (S1226). However, this would not necessarily call for a consolidation of the fund-of-funds and the individual funds, because the latter may also have shareholders other than the fund-of-funds. A particular case, where a consolidation could be analytically useful, is one in which a fettered fund-of-funds invests in individual funds with no participation, as shareholders, by third parties.

5.164 In the case of asset management provided by commercial banks, regarding which the risks and rewards of the assets managed are with the investor(s), the assets should be consolidated with the accounts of the investor, if it concerns a single institutional unit (e.g., if the asset management is customised to the client, like in "managed accounts" of private banking services to wealthy clients), or a separate institutional unit, to be classified as either money-market funds or non-MMF investment funds, should be distinguished, assuming that the relevant assets (and liabilities) can be separated out of the accounts of the relevant banks. See also the decision tree in figure 5.2.

5.165 Also in line with the decision tree in figure 5.2, investment funds which are set up and/or owned by another institutional investor, such as a pension scheme, should be consolidated with the investor, if the investment fund only serves a single investor, unless the fund clearly has autonomy of decision. In the case it concerns a non-resident fund, then it should be classified in subsector captive financial institutions and money lenders (S1227). Autonomy of decision would primarily concern the degree of autonomy in making decisions on the investment policy, either or not restricted by more general policy guidance.

5. Other financial intermediaries except insurance corporations and pension funds (ICPFs)

5.166 ***Other financial intermediaries except insurance corporations and pension funds (S1225) consist of institutional units principally engaged in providing financial services by incurring liabilities, in forms other than currency, deposits or close substitutes for deposits, on their own account for the purpose of acquiring financial assets by engaging in financial transactions on the market, and that are not included in another sub-sector.*** It is a feature of a financial intermediary that transactions on both sides of the balance sheet are carried out in open markets.

5.167 In general, the following financial intermediaries are classified in this subsector:

a. Financial corporations engaged in the securitization of assets. Securitization involves raising funds by selling a security backed by specific assets or income streams. For example, an originating mortgage lender could sell a portfolio of loans to a securitization vehicle that issues securities sold to investors. The originator may continue to provide administrative services, but the vehicle is the legal owner of the portfolio. Such vehicles are included in "other financial intermediaries except insurance corporations and pension funds" if the unit is the legal owner of a portfolio of assets, sells a new financial asset that represents an interest in the portfolio, and has or potentially has a full set of accounts. However, in cases in which the originator issues asset-backed securities on its own books, then securitization may take place without the creation of a separate unit. When the portfolio is not transformed, or the vehicle does not bear market or credit risks, then it can be combined with its parent (if resident in the same economy) or treated as a captive financial institution (if resident in an economy different from that of its parent).

b. Underwriters, security and derivative dealers (operating on own account). In contrast, security brokers and other units that arrange trades between buyers and sellers but do not purchase and hold securities on their own account are classified as financial auxiliaries (see paragraph 5.170 (b));

c. Financial corporations engaged in lending, including the finance associates of retailers, who may be responsible for financial leasing and both personal or commercial finance, including "buy now pay later" type of arrangements;

d. Central clearing counterparties, which provide clearing and settlement transactions in securities and derivatives. Clearing refers to the process of offsetting obligations and entitlements vis-à-vis counterparties to transactions so that settlement – which involves the actual exchange of securities, derivatives, and funds – can occur more efficiently on a net basis. The central clearing counterparties involve themselves in the transaction and mitigate counterparty risk;

e. Specialized financial corporations that assist other corporations in raising funds in equity and debt markets and provide strategic advisory services for mergers, acquisitions, and other types of financial transactions. (These corporations are sometimes called "investment banks".) In addition to assisting with the raising of funds for their corporate clients, such corporations invest their own funds, including investments in private equity, in hedge funds dedicated to venture capital, and in collateralized lending. However, if such corporations take deposits or close substitutes for deposits, they are classified as deposit-taking corporations;

f. Bank restructuring agencies; and

g. Specialized financial corporations that provide:

- Short-term financing for corporate mergers and takeovers;
- Export/import finance;
- Factoring services;
- Venture capital and development capital firms.

6. Financial auxiliaries

5.168 ***Financial auxiliaries (S1226) consist of financial corporations principally engaged in activities associated with transactions in financial assets and liabilities or with providing the regulatory context for these transactions but that do not involve the auxiliary taking ownership of the financial assets and liabilities being transacted***.

5.169 Corporations facilitating financial transactions, such as central clearing counterparties, stock exchanges, derivative exchanges, and repurchase agreement settlement institutions are classified as financial auxiliaries, if they do not act as principals to the counterparties to the underlying transactions; if they act as principals to the counterparties, they are classified as financial intermediaries. Crypto exchanges/trading/lending platforms may facilitate transactions in different types of crypto assets including those with and without corresponding liabilities. These units are classified as financial auxiliaries if their principal activity involves facilitating transactions in crypto assets with a corresponding liability. Otherwise, they are included in the non-financial corporations' sector.

5.170 In general, the following financial corporations are classified in this subsector:

a. Insurance brokers, salvage and claims adjusters (whether employed by the insurance company, an independent adjuster or a public adjuster employed by the policyholder), insurance and pension consultants;

b. Loan brokers, securities brokers that arrange trades between security buyers and sellers but that do not purchase and hold securities on their own account, investment advisers, and so on (securities dealers that trade in securities on their own account are classified as financial intermediaries);

c. Flotation corporations that manage the issue of securities;

d. Corporations whose principal function is to guarantee, by endorsement, bills and similar instruments;

e. Corporations that arrange derivative and hedging instruments, such as swaps, options and futures

(without issuing them);

f. Corporations providing infrastructure for financial markets such as securities depository companies, custodians, clearing offices facilitating transactions without acting as the counterparty (in contrast, central clearing counterparties, as discussed in paragraph 5.167 (d), are counterparties and thus classified as financial intermediaries rather than financial auxiliaries), and nominee companies;

g. Administrators of pension funds, investment funds including mutual funds and other funds, etc. (but not the funds they manage);

h. Stock exchanges, insurance exchanges, and commodity and derivative exchanges;

i. Crypto exchanges/trading/lending platforms that facilitate in buying/selling and lending/borrowing of different types of crypto assets;

j. Foreign exchange bureaus;

k. Crowd funding and peer-to-peer lending platforms;

l. Non-profit institutions recognized as independent legal entities serving financial corporations;

m. Head offices of financial corporations that are principally engaged in controlling financial corporations or groups of financial corporations but that do not themselves conduct the business of financial corporations;

n. Central supervisory authorities of financial intermediaries and financial markets when they are separate institutional units.

o. Financial digital platforms primarily involved in intermediating payment transactions (see paragraphs 22.80 to 22.82);

p. Resident offices of foreign financial institutions that do not accept deposits or extend credit on their own account; and

q. Credit rating agencies.

7. Captive financial institutions and money lenders

5.171 ***Captive financial institutions consist of institutional units providing financial services, where most of either their assets or liabilities are not transacted on open financial markets. They usually act as a financial agent for their affiliates, raising funds for lending to their affiliates or for purchase of their affiliates' assets. Money lenders consist of persons or groups of persons who offer small personal loans using mostly own funds. Their assets or liabilities are not transacted in open financial markets.*** Captive financial institutions and money lenders include units transacting with only a limited group of units (such as with subsidiaries) or subsidiaries of the same holding corporation or units that provide loans from own funds provided by only one sponsor. Other financial intermediaries except insurance corporations and pension funds (discussed in paragraphs 5.173 and 5.174) are distinguished from captive financial institutions and money lenders in that the latter serve a limited group only for at least one side of their balance sheet.

5.172 In general, the following financial corporations are classified in this subsector:

a. Holding corporations that hold only the assets (owning controlling-levels of equity) of a group of subsidiary corporations and whose principal activity is owning the group without providing any other service to the enterprises in which the equity is held, that is, they do not administer or manage other units;

b. Special purpose units that qualify as institutional units and raise funds in open markets to be used by their parent corporation;

c. Units which provide financial services exclusively with own funds, or funds provided by a sponsor to a range of clients and incur the financial risk of the debtor defaulting, including:

- Moneylenders;
- Corporations engaged in lending (for example providing student loans, import/export loans) from funds received from a sponsor such as a government unit or non-profit institution; and
- Pawnshops that predominantly engage in lending;

d. Conduits, intra group financiers, and treasury functions when these functions are undertaken by a separate institutional unit. Conduits typically refer to units that raise funds, which could be debt securities, shares or partnership interest, on open financial markets for passing on to other affiliated corporations. Often, the conduit's liabilities are guaranteed by a parent company;

e. Units such as trusts and similar wealth-holding units, estates, or agencies accounts that solely hold assets and liabilities, along with the associated property income, for a restricted group of investors or beneficiaries. In the case of a single investor or beneficiary assuming the risks and rewards, the accumulated assets should be assigned to the sector of the investor or beneficiary, unless the unit is resident in another economy than its beneficiary/investor.

8. Insurance corporations (ICs)

5.173 ***Insurance corporations (S1228) consist of incorporated, mutual and other units whose principal function is to provide individual coverage in case of life, accident, sickness, fire or other risks to individual institutional units or groups of institutional units, or to provide reinsurance services to other insurance corporations***. Captive insurance is included, that is, an insurance company that serves only its owners. Deposit insurers, issuers of deposit guarantees and other issuers of standardized guarantees that are separate institutional units and act like insurers by charging premiums and have reserves, are also classified as insurance corporations. More details on the recording of insurance are provided in chapter 24 on Insurance and pensions.

9. Pension funds (PFs)

5.174 Pension liabilities arise when an employer or government obliges or encourages members of households to participate in a social insurance scheme that will provide income in retirement. They may also arise from collective employer-independent schemes, such as schemes for self-employed persons. The social insurance schemes may be organized by employers or by government, they may be organized by insurance corporations on behalf of employers, or separate institutional units may be established to hold and manage the assets to be used to meet the pensions and to distribute the pensions. ***Pension funds (S1229) consist of only those social insurance pension schemes that are institutional units separate from the units that create them***. More details on the institutional unit test as well as the classification and recording of pension schemes are provided in chapter 24 on Insurance and pensions.

F. The general government sector and its subsectors

1. Government units as institutional units

5.175 Government units are unique kinds of legal entities established by political processes that have legislative, judicial or executive authority over other institutional units within a given area. Viewed as institutional units, the principal functions of government are to assume responsibility for the provision of goods and services to the community or to individual households and to finance their provision out of taxation or other incomes, to redistribute income and wealth by means of transfers, and to engage in non-market production. In general terms:

a. A government unit usually has the authority to raise funds by collecting taxes or compulsory transfers from other institutional units. In order to satisfy one of the basic requirements of an institutional unit in macroeconomic statistics, a government unit, whether at the level of the total economy, a region or a locality, must have funds of its own either raised by taxing other units or

received as transfers from other government units and the authority to disburse some, or all, of such funds in the pursuit of its policy objectives;

b. Government units typically make three different kinds of final outlays:

- The first group consists of actual or imputed expenditures on the free provision to the community of collective services such as public administration, defence, law enforcement, etc. that are organized collectively by government and financed out of general taxation or other income;
- The second group consists of expenditures on the provision of goods or services free, or at prices that are not economically significant, to individual households. These expenditures related to, for example, education and health, are deliberately incurred and financed out of taxation or other income by government in the pursuit of its social or political objectives, even though individuals could be charged according to their usage;
- The third group consists of transfers paid to other institutional units, mostly households, in order to redistribute income or wealth.

5.176 Within a single territory there may be many separate government units when there are different levels of government, specifically central, state or local governments. In addition, social security funds also constitute government units. These different kinds of government units are described later when the sub-sectoring of the general government sector is explained.

Government units as producers

5.177 The fact that governments choose to supply not only collective services but also many goods and individual services free, or at prices that are not economically significant, to households or other units does not necessitate that they produce them themselves. Even in the case of most collective services, or so-called "public goods", governments are obliged only to assume responsibility for organizing and financing their production. They are not obliged to produce them. However, government units do usually engage in a wide range of productive activities in practice, covering not only collective services but also many other goods and individual services. Because it is largely a matter of political choice, the range of goods and services produced by government units varies greatly from one country to another. Apart from some collective services such as public administration and defence, it is therefore difficult to categorize certain types of production, such as the production of education or health services, as intrinsically governmental, even though they are often produced by government units.

5.178 When a government unit wishes to intervene through the production of goods and services it has four options:

a. it may create a public corporation whose corporate policy, including pricing and investment, it is able to control;

b. it may create an NPI that it controls;

c. it may produce the goods or services itself in an establishment that it owns but that does not exist as a separate legal entity from the government unit itself;

d. it may create or enter into a public private partnership (PPP). (For more details, see chapter 30 on General government and the public sector).

5.179 However, a government establishment, or group of establishments engaged in the same kind of production under common management, should be treated as a quasi-corporation if the following three criteria hold:

a. the unit charges prices for its outputs that are economically significant;

b. the unit is operated and managed in a similar way to a corporation; and

c. the unit has a complete set of accounts that enable its operating surpluses, savings, assets and liabilities to be separately identified and measured.

5.180 Such quasi-corporations are market producers that are treated as separate institutional units from the

government units that own them. They are classified, sectored and sub-sectored in the same way as public corporations.

5.181 In order to be treated as a quasi-corporation the government must allow the management of the enterprise considerable discretion not only with respect to the management of the production process but also the use of funds. Government quasi-corporations must be able to maintain their own working balances and business credit and be able to finance some or all of their capital formation out of their own savings, depreciation reserves or borrowing. The ability to distinguish flows of income and capital between quasi-corporations and government implies that their operating and financing activities are not fully integrated with government revenue or finance statistics in practice, despite the fact that they are not separate legal entities.

5.182 Producer units of government that cannot be treated as quasi-corporations, like all unincorporated enterprises that cannot be separated from their owners, remain in the same institutional unit as the owner, in this case within the general government sector. They are likely to consist largely, or entirely, of non-market producers: that is, producers most or all of whose output is supplied to other units free, or at prices that are not economically significant. In addition to providing non-market goods or services to the general public, such units may include government producers supplying non-market goods or services to other government units for purposes of intermediate consumption or gross fixed capital formation: for example, munitions factories, government printing offices, transport agencies, computer or communications agencies, etc. However, it is possible for an unincorporated enterprise within a government to be a market producer. The example often quoted is that of a bookshop within a museum.

Social security schemes and social security funds

5.183 Social security schemes are social insurance schemes that cover the community as a whole or large sections of the community and are imposed and controlled by government units. The schemes cover a wide variety of programmes, providing benefits in cash or in kind for old age, invalidity or death, survivors, sickness and maternity, work injury, unemployment, family allowance, health care, etc. There is not necessarily a direct link between the amount of the contribution paid by an individual and the benefits he or she may receive.

5.184 When social security schemes are separately organized from the other activities of government units and hold their assets and liabilities separately from the latter and engage in financial transactions on their own account, they qualify as institutional units that are described as social security funds. However, institutional arrangements in respect of social security schemes differ from country to country and in some countries they may become so closely integrated with the other finances of government as to bring into question whether they should be treated as separate institutional units.

5.185 The amounts raised, and paid out, in social security contributions and benefits may be deliberately varied in order to achieve objectives of government policy that have no direct connection with the concept of social security as a scheme to provide social benefits to members of the community. They may be raised or lowered in order to influence the level of aggregate demand in the economy, for example. Nevertheless, so long as they remain separately constituted funds, they must be treated as separate institutional units.

2. The general government sector

5.186 The general government sector consists of the following groups of resident institutional units:

a. All units of central, state or local government (as described immediately below);

b. All non-market producers that are controlled by government units.

5.187 The sector also includes social security funds, either as separate institutional units or as part of any or all of central, state or local government. The sector does not include public corporations, even when all the equity of such corporations is owned by government units. Nor does it include quasi-corporations that are owned and controlled by government units. However, unincorporated enterprises owned by government units that are not quasi-corporations remain integral parts of those units and, therefore, must be included in the general government sector.

5.188 If a government uses an unit that is resident in the economic territory of another government to carry out general government activities (i.e., fiscal activities, rather than for a public corporation), that unit is not included as part of the general government in either its economy of residence or the economy of the government that uses the unit. Such units are not treated in the same way as embassies and other territorial enclaves if they are created and operate under the laws of the host economy. These units are treated as (foreign) direct investment enterprises of the government that owns them and classified as separate institutional units in the economy where they are established; see also paragraphs 5.94 to 5.96. Non-resident international joint ventures between governments, where neither party has control of the unit, are apportioned to governments as notional resident units.

3. Subsectors of the general government sector

5.189 A full sub-sectoring of the general government would allow for all government units, including social security funds, to be distinguished for each of central, state and local government. In practice, though, it is usual to show all social security funds together as one subsector or to merge them all with their appropriate level of government and not show social security funds by level of government separately. Further, NPIs may be shown as an "of which" item for general government as a whole or for central, state and local government individually.

5.190 The first method of sub-sectoring general government is as follows:

a. Central government (S1311);

b. State government (S1312);

c. Local government (S1313);

d. Social security funds (S1314),

where it is understood that each of the subsectors a, b and c include government controlled non-market producers but exclude social security funds at that level of government.

5.191 The second method of sub-sectoring general government is as follows:

a. Central government (S1321);

b. State government (S1322);

c. Local government (S1323),

where it is understood that each of the subsectors a, b and c include both government controlled non-market producers and social security funds at that level of government.

5.192 Under either method of sub-sectoring, NPIs should be shown as an "of which" heading under the appropriate level of government.

5.193 The choice between the two methods of sub-sectoring depends mainly on the size, or importance, of social security funds within a country and on the way in which they are managed.

5.194 In some countries there may not exist a proper intermediate level of government between central and local government, in which case the subsector "state government" is not distinguished. In others there may be more than two levels of government below the central government. In that case, the lower levels should be aggregated with state or local government as appropriate.

Central government

5.195 The central government subsector consists of the institutional unit or units making up the central government plus those non-market producers that are controlled by central government.

5.196 The political authority of central government extends over the entire territory of the country. Central government has therefore the authority to impose taxes on all resident and non-resident units engaged in

economic activities within the country. Its political responsibilities include national defence, the maintenance of law and order and relations with foreign governments. It also seeks to ensure the efficient working of the social and economic system by means of appropriate legislation and regulation. It is responsible for providing collective services for the benefit of the community as a whole, and for this purpose incurs expenditures on defence and public administration. In addition it may incur expenditures on the provision of services, such as education or health, primarily for the benefit of individual households. Finally, it may make transfers to other institutional units, namely to households, NPIs, corporations and other levels of government.

5.197 Central government is a large and complex subsector in most countries. It is generally composed of a central group of departments or ministries that make up a single institutional unit plus, in many countries, other institutional units. The departments may be responsible for considerable amounts of expenditure within the framework of the government's overall budget, but often they are not separate institutional units capable of owning assets, incurring liabilities, engaging in transactions, etc., independently of central government as a whole.

5.198 The departments of central government are often deliberately dispersed geographically and located in different parts of the country, but they nevertheless remain parts of a single institutional unit. Similarly, if the central government maintains branch offices or agencies in different parts of the country to meet local needs, including military bases or installations that serve national defence purposes, these must also be counted as parts of a single institutional unit for central government.

5.199 In addition to government departments and ministries, there may be agencies of central government with separate legal identity and substantial autonomy; they may have discretion over the volume and composition of their expenditures and may have a direct source of revenue such as earmarked ("hypothecated") taxes. Such agencies are often established to carry out specific functions such as road construction or the non-market production of health or education services. These should be treated as separate institutional units if they maintain full sets of accounts but are part of the central government subsector if the services they produce are non-market and if they are controlled by central government.

5.200 In some countries, the central government may include units that engage in financial transactions that in other countries would be performed by central banks. In particular, units of central government may be responsible for the issue of currency, the maintenance of international reserves and the operation of exchange stabilization funds, and also transactions with the International Monetary Fund (IMF). When the units in question remain financially integrated with central government and under the direct control and supervision of central government, they cannot be treated as separate institutional units. Moreover, whatever monetary authority functions are carried out by central government are recorded in the government sector and not the financial corporations' sector. However, because of the analytical importance that is attached to obtaining accounts covering the monetary authorities as a whole, and in order to provide links with other statistical systems, such as the *BPM*, the *GFSM* and the *MSFMCG*, it is recommended to separately identify the transactions of central government agencies carrying out monetary authority and deposit-taking functions, so that they can be combined with those of the central bank and other deposit-taking corporations in special tabulations if desired.

State government

5.201 The state government subsector consists of state governments that are separate institutional units plus those non-market producers that are controlled by state governments.

5.202 State governments are institutional units exercising some of the functions of government at a level below that of central government and above that of the governmental institutional units existing at a local level. They are institutional units whose fiscal, legislative and executive authority extends only over the individual "states" into which the country as a whole may be divided. Such "states" may be described by different terms in different countries. In some countries, especially small countries, individual states and state governments may not exist. However, in large countries, especially those that have federal constitutions, considerable powers and responsibilities may be assigned to state governments.

5.203 A state government usually has the fiscal authority to levy taxes on institutional units that are resident in, or engage in economic activities or transactions within, its area of competence (but not other areas). In order to

be recognized as an institutional unit it must be able to own assets, raise funds and typically be able to incur liabilities on its own account. In respect of the latter, some government units having all the attributes of an institutional unit with the exception of incurring liabilities on their own behalf may still qualify as institutional units. It must also be entitled to spend or allocate some, or possibly all, of the taxes or other income that it receives according to its own policies, within the general rules of law of the country, although some of the transfers it receives from central government may be tied to certain specified purposes. It should also be able to appoint its own officers, independently of external administrative control. On the other hand, if a regional unit is entirely dependent on funds from central government, and if the central government also dictates the ways in which those funds are to be spent at the regional level, it should be treated as an agency of central government rather than as a separate institutional unit.

5.204 State governments, when they exist, are distinguished by the fact that their fiscal authority extends over the largest geographical areas into which the country as a whole may be divided for political or administrative purposes. In a few countries more than one level of government exists between the central government and the smallest governmental institutional units at a local level; in such cases, for purposes of sectoring within the sequence of economic accounts of the SNA, these intermediate levels of government are grouped together with the level of government, either state or local, with which they are most closely associated.

5.205 State governments may own, or control, corporations in the same way as central government. Similarly, they may have units that engage in market production, in which case the relevant producer units should be treated as quasi-corporations whenever their operations and accounting records justify this.

Local government

5.206 The local government subsector consists of local governments that are separate institutional units plus those non-market producers that are controlled by local governments. In principle, local government units are institutional units whose fiscal, legislative and executive authority extends over the smallest geographical areas distinguished for administrative and political purposes. The scope of their authority is generally much less than that of central government or state governments, and they may, or may not, be entitled to levy taxes on institutional units resident in their areas. They are often heavily dependent on grants or transfers from higher levels of government, and they may also act as agents of central or regional governments to some extent. However, in order to be treated as institutional units they must be entitled to own assets, raise funds and typically be able to incur liabilities by borrowing on their own account; similarly, they must have some discretion over how such funds are spent. They should also be able to appoint their own officers, independently of external administrative control. The fact that they may also act as agents of central or state governments to some extent does not prevent them from being treated as separate institutional units provided they are also able to raise and spend some funds on their own initiative and own responsibility. In this respect, some of these government units having all the attributes of an institutional unit with the exception of incurring liabilities on their own behalf may still qualify as institutional units.

5.207 As they are the government units that are in closest contact with the institutional units resident in their localities, they typically provide a wide range of services to local residents, some of which may be financed out of transfers from higher levels of government. The same rules govern the treatment of the production of goods and services by local government units as are applied to central and state governments. Units such as municipal theatres, museums, swimming pools, etc., that supply goods or services on a market basis should be treated as quasi-corporations whenever the appropriate accounting information is available and classified to the non-financial corporations' sector. Other units supplying goods and services on a market basis are treated as unincorporated enterprises within local government. Units supplying services such as education or health on a non-market basis remain an integral part of the local government unit to which they belong.

Social security funds

5.208 The social security funds subsector consists of the social security funds operating at all levels of government.

4. The alternative method of sub-sectoring

5.209 The alternative method of sub-sectoring the general government sector is to group the social security funds operating at each level of government with the corresponding government units and government controlled non-market producers at that level of government. The two alternative methods of sub-sectoring are designed to accommodate different analytical needs. The decision as to which method is more appropriate in a given country cannot be made a priori. It depends on how important social security funds are and on the extent to which they are managed independently of the government units with which they are associated. If the management of social security funds is so closely integrated with the short- or medium-term requirements of the government's general economic policy that contributions and benefits are deliberately adjusted in the interests of overall economic policy, it becomes difficult, at a conceptual level, to draw any clear distinction between the management of social security and the other economic functions of government. Alternatively, in some countries, social security funds may exist in only a very rudimentary form. In either of these circumstances it is difficult to justify treating social security funds as a separate subsector on a par with central, state and local government, and it is more appropriate to use the alternative method of sub-sectoring in which they are grouped with the corresponding government units at each level of government.

G. The households' sector and its subsectors

1. Households as institutional units

5.210 For the purposes of macroeconomic statistics, a household is defined in paragraph 5.4 as a single person having a separate living accommodation, or a group of persons who share the same living accommodation, who pool some, or all, of their income and wealth and who consume certain types of goods and services collectively, mainly housing and food. In general, each member of a household should have some claim upon the collective resources of the household. At least some decisions affecting consumption or other economic activities must be taken for the household as a whole.

5.211 Households often coincide with families, but members of the same household do not necessarily have to belong to the same family so long as there is some sharing of resources and consumption. Households may be of any size and take a wide variety of different forms in different societies or cultures depending on tradition, religion, education, climate, geography, history and other socio-economic factors. The definition of a household that is adopted by survey statisticians familiar with the socio-economic conditions within a given country is likely to approximate closely to the concept of a household as defined in macroeconomic statistics, although survey statisticians may add more precise, or operational, criteria within a particular country.

5.212 Domestic staff who live on the same premises as their employer do not form part of their employer's household even though they may be provided with accommodation and meals as remuneration in kind. Paid domestic employees have no claim upon the collective resources of their employers' households and the accommodation and food they consume are not included with their employer's consumption. They should therefore be treated as belonging to separate households from their employers.

5.213 Persons living permanently in an institution, or who may be expected to reside in an institution for a very long, or indefinite, period of time are treated as belonging to a single institutional household when they have little or no autonomy of action or decision in economic matters. Some examples of persons belonging to institutional households are the following:

a. Members of religious orders living in monasteries, convents or similar institutions;

b. Long-term patients in hospitals, including mental hospitals;

c. Prisoners serving long sentences;

d. Persons living permanently in retirement homes;

e. Persons living in labour camps.

5.214 On the other hand, persons who enter hospitals, clinics, convalescent homes, religious retreats, or similar institutions for short periods, who attend residential schools, colleges or universities, or who serve short

prison sentences should be treated as members of the individual private households to which they normally belong.

5.215 The residence of individual persons is determined by that of the household of which they form part and not by their place of work. All members of the same household have the same residence as the household itself, even though they may cross borders to work or otherwise spend periods of time abroad. If they work and reside abroad so long that they acquire a centre of economic interest abroad, they cease to be members of their original households. More details on the residence of households are provided in paragraphs 5.254 to 5.265.

2. Unincorporated enterprises within households

5.216 As noted in the introduction, households are unlike corporations in that they undertake final consumption. However, like corporations, they may also engage in production. Household unincorporated market enterprises are created for the purpose of producing goods or services for sale or barter on the market. They can be engaged in virtually any kind of productive activity: agriculture, mining, manufacturing, construction, retail distribution or the production of other kinds of services. They can range from single persons working as street traders or shoe cleaners with virtually no capital or premises of their own to large manufacturing, construction or service enterprises with many employees.

5.217 Household unincorporated market enterprises also include unincorporated partnerships that are engaged in producing goods or services for sale or barter on the market. The partners may belong to different households. When the liability of the partners for the debts of the enterprises is unlimited, the partnerships must be treated as unincorporated enterprises and remain within the household sector since all the assets of the household, including the dwelling itself, are at risk if the enterprise goes bankrupt. However, unincorporated partnerships with many partners, such as some large legal, accounting or architectural firms, are likely to behave like corporations and should be treated as quasi-corporations assuming complete sets of accounts are available for the partnerships. Partnerships whose partners enjoy limited liability are effectively separate legal entities and, as already noted, are treated as corporations.

5.218 An unincorporated enterprise can only be treated as a corporation if it is possible to separate all assets, including financial assets down to the level of cash, into those that belong to the household in its capacity as a consumer from those belonging to the household in its capacity as a producer.

3. Family trusts

5.219 Households may create trusts for a variety of reasons. Disregarding the issue of a family trust being resident in another country than its beneficiaries, as a consequence of which it would be treated as a separate institutional unit by convention, the standard criteria for an institutional unit should be applied for treating trusts which are resident in the same economy as its beneficiaries. In practice, the trust should be consolidated with the household, if there is a single beneficiary assuming the risks and rewards, while in the case of a trust with multiple beneficiaries, the trust is to be treated as a separate institutional unit, to be classified in subsector captive financial institutions and money lenders (S1227) assuming that the group of beneficiaries is restricted. More details on the treatment of trusts are provided in paragraphs 5.97 to 5.105.

4. Subsectors of the household sector

5.220 The household sector consists of all resident households. There are many useful ways in which the households' sector may be sub-sectored and statistical agencies are advised to give due consideration to the various possibilities. More than one method may be adopted if there is a demand for different breakdowns of the households' sector from different users, analysts or policymakers.

5.221 The SNA has to be applied flexibly, not rigidly. In order to implement any of the possible methods of sub-sectoring the households' sector suggested below, individual countries should make their own decisions about what they consider to be the most relevant classification. Thus, the fact that a specific, detailed

classification according to a criterion of interest is proposed here should not be interpreted as implying that the characteristics proposed are necessarily or always the most important for purposes of economic analysis and policymaking. Having said that, in view of the importance of having internationally comparable data on the distribution of income, consumption, saving and wealth across household groups, below a sub-sectoring according to income and wealth deciles is put forward as a standard breakdown, while other breakdowns are considered to be supplementary items, which could be more or less relevant depending on country circumstances.

5.222 More generally, when breaking down the households' sector into various groups of households, institutional households are typically excluded from the analysis. The main reason for excluding these types of households is that they may comprise large groups of individuals with very different socio-demographic backgrounds, who are not related, and who may have very different income and consumption patterns. As a consequence, they are not really comparable with private households, which is why it is recommended to analyse and present them separately.

Sub-sectoring according to levels of income and wealth

5.223 Households may be grouped into subsectors according to their level of income or their level of wealth. As the size and composition of households differ significantly, ranging from one-person households to households with multiple adults with or without children, the levels of income, consumption and wealth are not directly comparable. Therefore, it is recommended to focus on "equivalized" results, using equivalence scales that take into account the differences in size and composition of households. In doing so, results for income and consumption are typically recalculated according to the number of consumption units in each household, whereby a value is assigned to each household type in proportion to its needs. As a default, the "modified OECD scale" could be used, which assigns a value of 1 to the first adult household member (14 and above), of 0.5 to each additional household member of 14 and above, and of 0.3 to each additional household member up to 13. However, as the most appropriate scale may depend on specific circumstances, countries may look for other equivalence scales which may be more representative of their national circumstances.

5.224 In relation to the analysis of wealth, the use of equivalence scales depends on the purpose of the analysis. They should be avoided when analysing the characteristics of individual components of wealth and the distribution of net wealth. To control for different household structures, complementary analysis can be done on per capita basis. However, for the joint analysis of income, consumption and wealth, it is practical to use the same equivalence scales to adjust wealth as those used to adjust income and consumption. In doing so, wealth is treated as a source of income streams that can be used to finance current consumption and contribute to current material well-being in the household.

5.225 As a standard, breakdowns by standard of living based on (current) disposable income and based on wealth should be targeted, showing income and wealth decile groups, and, if possible, results for the top 5% and the top 1%. Depending on analytical needs, alternative breakdowns as presented below could be compiled, as supplementary items. More details on compiling distributional results are provided in chapter 32 on Households.

Sub-sectoring according to other criteria

5.226 Households may also be grouped into subsectors according to the nature of their largest source of income. For this purpose, the following types of household income could be distinguished:

a. Income from self-employment;

b. (Net) property income;

c. Remuneration of employees;

d. (Net) current transfers received, to be broken down into pension benefits and other (net) current transfers.

5.227 Households are allocated to subsectors according to which of the four categories of income listed above is the largest for the household as a whole, even if it does not always account for more than half of total household income. When more than one income of a given category is received within the same household, for example, because more than one member of the household earns remuneration of employees or because more than one property or transfer income is received, the classification should be based on the total household income within each category.

5.228 Another way of grouping households into subsectors is to look at the number and age of the members of the household, as follows:

a. Single less than 65 years old;

b. Single 65 and older;

c. Single with children living at home;

d. Two adults less than 65 without children living at home;

e. Two adults with at least one 65 or older without children living at home;

f. Two adults with less than 3 children living at home;

g. Two adults with at least 3 children living at home; and

h. Other households.

5.229 Within the above household compositions, children are generally classified as up to 16 years, and up to 24 years if they are the offspring of one of the household members and are still living at home. The classification of children may vary between countries dependent on national legislation.

5.230 Alternative classifications could also be considered:

a. By geographic region;

b. By housing status (e.g., rental, owner-occupied with mortgage, and owner-occupied without mortgage);

c. By the age of the reference person (e.g., 0-24, 25-34, 35-44, 45-54, 55-64, 65- 74, and 75+);

d. By labour market status of the reference person (e.g., unemployed, employee, employer, own account worker, unpaid family worker, member of producer's cooperative, student, retired and not classified by status);

e. By highest level of educational attainment of the reference person (e.g., low, middle and high);

f. By disability status of the reference person;

g. By migratory status of the reference person;

h. By ethnicity of the reference person;

i. By degree of urbanisation; and

j. By sex or gender of the reference person.

5.231 Cross-sections of the groupings as listed above with the subsectors according to the level of income and wealth may also be possible, such as further breaking down labour market status groups by income decile, or by looking at the income distribution within regions. This may provide more detailed insights in inequalities within specific subgroups. However, it is important to assess the quality of the results at these more granular levels of detail. In this respect, more detailed insights in household groups may also be obtained by combining the distributional results based on the level of income and wealth with socio-demographic information, focusing on specific socio-demographic characteristics of households or individuals belonging to the various household groups.

H. The non-profit institutions serving households' sector

5.232 Previous sections have explained that NPIs are allocated to the corporations' sectors when they are engaged in market production and to the general government sector if they are engaged in non-market production but subject to government control. The remaining NPIs are termed non-profit institutions serving households (NPISHs). All provide goods and services free or at prices that are not economically significant.

5.233 One type of NPISHs consists of those that are created by associations of persons to provide goods or, more often, services primarily for the benefit of the members themselves. The services are usually provided free, being financed by regular membership subscriptions or dues. They include NPISHs such as professional or learned societies, political parties, trades unions, consumers' associations, churches or religious societies, and social, cultural, recreational or sports clubs. They do not include bodies serving similar functions that are controlled by government units. Religious institutions are treated as NPISHs even when mainly financed by government units if this majority financing is not seen as empowering control by government. Political parties in countries with one-party political systems that are controlled by government units by means of providing the necessary finance are included in the general government sector.

5.234 In some communities, NPISHs may be found that do not possess any legal status or formal articles of association. They should be treated as NPISHs when they perform the same kinds of functions as the societies, political parties, trades unions, etc., described above, even if they are not legally constituted as NPISHs. However, when groups of households collaborate on communal construction projects (such as construction of buildings, roads, bridges, ditches, dykes, etc.), they should be treated as informal partnerships engaged on own-account construction rather than NPISHs. NPISHs should normally have a continuing role to play and not be deemed to be created for single projects of limited duration.

5.235 A second type of NPISH consists of charities, relief or aid agencies that are created for philanthropic purposes and not to serve the interests of the members of the association controlling the NPISH. Such NPISHs provide goods or services on a non-market basis to households in need, including households affected by natural disasters or war. The resources of such NPISHs are provided mainly by donations in cash or in kind from the general public, corporations or governments. They may also be provided by transfers from non-residents, including similar kinds of NPISHs resident in other countries.

5.236 The third type of NPISHs consist of those that provide collective services, such as research institutions that make their results freely available, environmental groups, etc. These are less common than the first two types of NPISHs and may not always be significantly represented in a country.

5.237 If the number or size of NPISHs funded from abroad is significant, it may be useful to disaggregate NPISHs into those that are mainly funded domestically and those that are mainly funded from abroad.

I. The rest of the world

5.238 For purposes of the sequence of economic accounts of the SNA, the *BPM* and other macroeconomic statistics, ***the rest of the world (S2) consists of all non-resident institutional units that enter into transactions with resident units, or that have other economic links with resident units.*** It is not a sector for which complete sets of accounts have to be compiled, although it is often convenient to describe the rest of the world as if it were a sector. The accounts, or tables, for the rest of the world are confined to those that record transactions between residents and non-residents or other economic relationships, such as claims by residents on non-residents, and vice versa. The rest of the world includes certain institutional units that may be physically located within the geographic boundary of a country; for example, foreign enclaves such as embassies, consulates or military bases, and also international organizations.

1. International organizations

5.239 Certain international organizations have all the essential attributes of institutional units. The special characteristics of an "international organization" as this term is used in macroeconomic statistics may be summarized as follows:

a. The members of an international organization are either national states or other international organizations whose members are national states; they thus derive their authority either directly from the national states that are their members or indirectly from them through other international organizations;

b. They are organizations established by formal political agreements between their members that have the status of international treaties; their existence is recognized by law in their member countries;

c. International organizations are created for various purposes:

- International financial organizations – these organizations conduct financial intermediation at an international level (i.e., channelling funds between lenders and borrowers in different economies). A central bank to a group of economies (including currency union central banks) is an example of an international financial organization. Other examples are the International Monetary Fund (IMF), World Bank Group, the Bank for International Settlements (BIS), and regional development banks; and
- Other international organizations – these organizations provide non-market services of a collective nature for the benefit of their member states, such as peacekeeping, education, science, policy issues, and other research.

5.240 International organizations may be global or regional. An international agency responsible for functions normally undertaken by general government, such as administration and policing, is classified as an international organization, but it may be useful to identify such agencies separately in statistics.

5.241 International organizations are treated as not being resident of the territories in which they are located. This treatment is because they are generally exempted from, or are only partially subject to, national laws or regulations, and so they are not considered to be part of the national economy of the territory, or territories, in which they are located.

5.242 International organizations may be presented as an institutional sector in some cases. First, they may appear in data for a currency union or economic union, in which case, international organizations of the union are residents of the union as a whole. Second, they may be of relevance when data by sector of counterparty are prepared, for example, for sources of current transfers. Such data would be of particular interest in economies in which international organizations have a substantial presence.

5.243 In contrast to international organizations, enterprises owned jointly by two or more governments are not treated as international organizations but like other enterprises. In the case of joint zones under the control of two or more governments, the enterprises in the zone are split between governments based on some operational indicator or equal proportions; see paragraph 5.253. The distinction is based on whether the organization produces for the market and is important because of the different treatments for the residence of international organizations and enterprises. Separate pension funds for the staff of international organizations are treated as pension funds, rather than as international organizations. Therefore, the residence of these pension funds is determined according the general principle for determining residency.

2. Currency unions and currency union central banks

5.244 A currency union is defined as a union to which two or more economies belong and that has a regional central decision-making body, commonly a currency union central bank (CUCB), endowed with the legal authority to conduct a single monetary policy and issue the single currency of the union.

5.245 A distinction can be made between centralized currency unions and decentralized currency unions. In the former model, the currency union has a CUCB owned by the governments of the member economies with the common currency issued by the CUCB and central bank operations in each economy carried out by branches or agencies of the CUCB. In the latter model, the currency union comprises a CUCB and currency union national central banks (CUNCBs) of the member economies with the CUCB being owned by the CUNCBs. The monetary policy decisions are taken by the decision-making body of the CUCB, which also coordinates the implementation of the decisions, a primary responsibility of the CUNCBs.

5.246 The central bank of a currency union is treated as a special kind of international organization. The members

of the international organization of which the central bank is part are the governments or the national central banks of the countries in the currency union. The central bank is treated as being non-resident in any of the member countries of the currency union but is resident in the currency area as a whole. More on the treatment of currency and economic unions can be found in annex 3 of *BPM7.*

5.247 In relation to the treatment of centralized currency unions, national agencies, including the notional resident units, are treated as residents of the economies of their location. Transactions between the national agency and resident units of the same member economy settled through accounts at the currency union central bank will thus be recorded/imputed in the balance sheets of the national agency for statistical purposes, and treated as transactions and positions between residents. This ensures that in each economy, monetary activities with residents of the currency union are carried out by national agencies (which resemble in its operations a national central bank) having their own assets and liabilities.

J. Special issues associated with economic territory and residence

5.248 This section starts with providing slightly more detailed guidance on the concept of economic territory. Subsequently, the concept of residence is further elaborated for households and individuals, for enterprises and various types of production arrangements, and for government units, (regional) international organizations and NPISHs. The section ends with a discussion of the treatment of assets and liabilities held by groups of residents and non-residents, the treatment of changes in residence of institutional units, and finally, alternatives to the residence concept.

1. More details on the economic territory

International organizations

5.249 The economic territory of an international organization, as defined in paragraphs 5.239 to 5.243, consists of territorial enclave(s) over which the organization has jurisdiction. These enclaves are clearly demarcated land areas or structures that the international organization owns or rents and uses, and that are formally agreed on with the government of the territory, or territories, in which the enclave(s) are physically located. Each international organization is an economic territory in its own right, covering operations from all its locations. As a consequence, the economic territory of international organizations is not included in the scope of a country's macroeconomic statistics.

Special zones

5.250 Sometimes a government has a separate physical or legal zone that is under its control, but to which, to some degree, separate laws are applied. For example, a free trade zone or offshore financial centre (i.e., a jurisdiction in which financial corporations located there predominantly have financial transactions and positions with clients outside that jurisdiction) may be exempt from certain taxation or other laws. Because of the need to view the whole economy, to have comprehensive global data, and to be compatible with partner data, these special zones always should be included in the economic statistics of that economy. While national totals showing all economic activities in the economy are required for international purposes, separate data may be prepared for different subsets of the economy. To the extent that different laws and policies may apply, and persons, goods, and finance do not flow completely freely between a zone and the rest of the economy, a government may wish to have data to support separate analysis of either or both the special zone and the remainder of the economy.

Changes in economic territory

5.251 The scope of an economic territory may change under several circumstances:

a. The passing of control of a geographic area from one government to another by mutual agreement or under a decision of an international court or arbitrator. These exchanges satisfy the definition of

a transaction. Accordingly, assets conveyed from one government to the other are recorded as an acquisition of land or an acquisition of equipment and buildings. If the exchange is made in exchange for payment or extinguishing of a prior liability, the corresponding entry is a financial account entry for the agreed amount. If there is no amount payable, the corresponding entry is a capital transfer. If there is a mutual exchange of land or buildings, both entries in the exchange are shown on a gross basis. In addition to these cases involving the two governments, the exchange of territory could change the territory of residence of other institutional units. As with other changes in residence, these would result in other changes in the volume of assets and liabilities.

b. Change in the status of a particular area by seizure. Because this change in status is not by mutual agreement, it is not a transaction, but would instead be reflected by entries in the other changes in volume of assets and liabilities account.

c. The merger of two or more economic territories to have a single national government may be seen as an absorption of one territory by another or the elimination of two territories and the creation of another. These arrangements result in entries in the other changes in volume of assets and liabilities account (i.e., elimination of cross-border liabilities between the two previous constituent territories and possible reclassifications for economies having asset or liability positions with either territory).

d. The split of a single economic territory into two or more territories is not in itself a transaction. However, there may be associated flows between the parties, for example, compensation for assuming liabilities that would qualify as transactions and be classified according to usual definitions. There also would be entries in the other changes in volume of assets and liabilities account for the appearance of cross-border liabilities between the two separating economies.

5.252 When such events occur, it is essential that metadata are provided to assist users in understanding how the territorial changes affect the data.

Joint zones

5.253 In some cases, areas are under joint administration or sovereignty, that is, an area is under the effective economic control of two or more governments. These areas can be called joint administration or sovereignty zones. Because, typically, they have laws that differ from the primary territories of the individual governments, the zone could be considered an economic territory in its own right. Because the number of enterprises in these zones typically is small, however, it may be preferred to split the enterprises in the zone between the primary territories rather than publish separate data for the zone. The method of splitting should be to prorate on the basis of a relevant factor according to the circumstances, such as some operational indicator or equal proportions for each of the primary territories. This general guidance needs to be applied appropriately to the economic circumstances faced. For instance, when the enterprises that account for the vast majority, or all, of the economic activity in the zone are effectively operated from the economy of just one of the sovereign authorities, it may be preferred to treat those enterprises as residents of that economy, showing the other economy as recipient of its share of property income, taxes, and so on, and avoiding most of the complexities of prorating for those enterprises. The statistical compilers of each primary territory involved should consult with each other to adopt consistent methods with no gaps or overlaps. Through metadata and consultations, they may also assist compilers in counterpart economies to ensure consistency of bilateral data.

2. More details on residence

Residence of households

5.254 Although many people are clearly strongly connected to only one economy, others have substantial economic interests in two or more economic territories. Factors such as location of dwellings, employment, asset holdings, citizenship, migration status, income tax status, income received, expenditure, business interests, and location of dependent family members may point to different economies. To identify the economy of residence when there are connections to two or more economies, the following definition is used to identify the centre of predominant economic interest.

5.255 A household is resident in the economic territory in which household members maintain or intend to maintain a dwelling or succession of dwellings treated and used by members of the household as their principal dwelling. Any unincorporated enterprise of such a household is also resident in this economic territory. Being present for one year or more in a territory or intending to do so is sufficient to qualify as having a principal dwelling there. If there is uncertainty about which dwelling is the principal dwelling, it is identified from the length of time spent there, rather than other factors such as presence of other family members, cost, size, or length of tenure.

5.256 Individuals who belong to the same household must be residents of the same territory. If a member of an existing household ceases to reside in the territory where his or her household is resident, the individual ceases to be a member of that household. As a result of this definition, the use of households as the institutional unit is compatible with residence being determined on an individual basis.

5.257 Further to the general principles, some other factors are used to determine residence of particular categories. These categories are students, medical patients, ship's crew, as well as national diplomats, military personnel, staff of scientific stations, and other civil servants employed abroad in government enclaves (these enclaves are discussed in paragraph 5.14). In these cases, some other connections are considered to be more important in determining residence. In the case of significant population movements between two particular territories, compilers in each territory should cooperate to ensure consistent definitions and measurement.

Students

5.258 People who go abroad for full-time study generally continue to be resident in the territory in which they were resident prior to studying abroad. This treatment is adopted even though their course of study may exceed a year. However, students change to being residents of the territory in which they are studying when they develop an intention to continue their presence in the territory of study after the completion of the studies. For students, the rationale for not changing the territory of residence is that the movement to a different territory is considered to have a temporary motivation, that is, their centre of predominant economic interest remains with the home territory. The residence of accompanying dependents of students is determined in the same manner as the persons they accompany. From the perspective of their resident economy, the tuition and other expenditure of students and accompanying persons in their host economies are included in import of services.

Patients

5.259 People who go abroad for the purpose of medical treatment maintain their predominant centre of interest in the territory in which they were resident before they received the treatment, even in the rare cases in which complex treatments take a year or more. As with students, the movement is considered to have a temporary motivation. The residence of accompanying dependents of patients is determined in the same manner as the persons they accompany. From the perspective of their resident economy, the expenditures of patients and accompanying persons in their host economies are included in import of services.

Crew of ships and so on

5.260 Crew of ships, aircraft, oil rigs, space stations, or other similar equipment that operate outside a territory or across several territories are treated as being resident in their home base territory. The home base is determined from where they spend most time other than undertaking their duties. The home base is regarded as a stronger connection than the location of the mobile equipment or its operator, even though most of the time may be spent at the latter location. From the perspective of their resident economy, the expenditures of the crew members in their host economies are included in import of services.

Diplomats, military personnel, and so on

5.261 National diplomats, peacekeeping and other military personnel, and other civil servants employed abroad in government enclaves, as well as members of their households are considered to be residents of the economic territory of the employing government. Those enclaves – military bases, embassies, and the like, as discussed in paragraph 5.14 – form part of the economic territory of the employing government. They continue to be residents in their home economies even if they live in dwellings outside the enclaves. The expenditure of diplomats and so on, including that of their households, in their host economies is included in imports of goods and services. Other employees, such as locally recruited staff, are resident in the location of their principal dwelling.

International organization staff

5.262 Staff of international organizations, including those with diplomatic status and military personnel, are resident in the territory of their principal dwelling. The treatment of international organization staff is different from national diplomats and others discussed in the previous paragraph because the latter continue to be paid from and directed by their home government and tend to have shorter postings and rotate back to their economy of origin.

Cross-border workers

5.263 Border workers, seasonal workers, and other short-term workers cross borders for a certain period to undertake a job. No special treatment is adopted, so their residence is determined according to the criteria in paragraph 5.254. Border workers are employed persons who cross from one territory to another to attend their place of employment. Seasonal workers cross the border for particular periods, such as the harvest or tourist seasons to attend a place of employment. Other short-term employment may occur for a particular task, such as a construction project, repairs, delivery of advice, and so on. In each case, the residence of the persons concerned is based on the principal dwelling, rather than the territory of employment.

Highly mobile individuals

5.264 Some individuals have close connections with two or more territories, for example, they have dwellings in more than one territory in which they spend significant amounts of time. For individuals who do not have continuous actual or intended presence in any one territory for one year, the territory of the principal dwelling they maintain is the key consideration. In cases of no principal dwelling, or two or more principal dwellings in different economies, the territory of residence is determined on the basis of the territory in which the predominant amount of time is spent in the year. Although these individuals need to be classified as residents of a single economy for statistical purposes, additional information may be needed in recognition of strong ties to another economy. The statistical result of classifying long-term guest workers as residents of the host economy is appropriate, however, in that their income and consumption in the host territory are not treated as international transactions, only the amounts actually sent to the home economy are.

Refugees

5.265 No special treatment is adopted for refugees and they are recorded according to the same principles as migrants, although their motivation is usually different. Their residence will change from their home territory to the territory of refuge, if they have stayed or intend to stay in their place of refuge for one year or more, even if that residence is involuntary or transient, and its future status is unclear. The awarding of special rights and protection to refugees for at least one year could be taken into account to assess their intended duration of stay in the territory of refuge.

Residence of enterprises

5.266 As a general principle, an enterprise is resident in an economic territory when the enterprise is engaged in a significant amount of production of goods or services from a location in the territory. Additional principles are spelled out in paragraphs 5.269 to 5.271. As stated in paragraph 6.1, an enterprise is an institutional unit engaged in production and may be a corporation or quasi-corporation, a non-profit institution, or an unincorporated enterprise (part of household sector).

5.267 In contrast to individuals and households, which may have connections to two or more economies, enterprises are almost always connected to a single economy. Taxation and other legal requirements tend to result in the use of a separate legal entity for operations in each legal jurisdiction. In addition, a separate institutional unit is identified for statistical purposes in cases in which a single legal entity has substantial operations in two or more territories (e.g., for branches, land ownership, and multi-territory enterprises, as further elaborated in paragraphs 5.53 to 5.71). As a result of splitting such legal entities, the residence of each of the subsequently identified enterprises is clear. The introduction of the terminology "centre of predominant economic interest" does not mean that units with substantial operations in two or more territories no longer need to be split.

5.268 It is generally required that production take place or is planned to take place in the territory over a period of a year or more for a quasi-corporation to be identified. All enterprises must be resident somewhere. However, if an institutional unit undertakes production over a shorter period of time in an economic territory different from its location, no quasi-corporation should be identified in that economic territory.

Corporations with little or no physical presence

5.269 A legal entity is resident in the economic territory under whose laws the entity is incorporated or registered. If it is a resident artificial subsidiary, it is combined with a parent resident in the same economy to form an institutional unit or, for some purposes, combined into a local enterprise group. However, it must not be combined with units resident in other economies. If it has substantial operations in another economy, a branch may be identified there; see paragraph 5.18 (c). In some cases, a corporation has little or no physical presence, for example, its administration is entirely contracted out to other units. Banking, insurance, investment funds (as distinct from their administrators), securitization vehicles, and some other institutional units with similar designations often operate this way. Similarly, with virtual manufacturing, all the physical processes are outsourced to other units.

5.270 A single corporation might be registered in several jurisdictions, for example, when it comes to incorporation, income tax, value added tax and particular regulations, and a jurisdiction may have been agreed on for settling disputes involving the enterprise. In such cases, the jurisdiction of the laws that govern the creation and continued existence of the unit should be used as the criterion for determining residence. If there is no incorporation or registration, legal domicile is used as a criterion. The incorporation and registration represent a substantial degree of connection to the economy, associated with jurisdiction over the enterprise's existence and operations. In contrast, other connections such as ownership, location of assets, or location of managers or administration may be less clear-cut.

Production delivered from a base

5.271 In some cases, an enterprise has a location that is used as a base to deliver services to other locations. For example, this mode is used for transport and also may be used for delivery of many kinds of services, such as on-site repairs, short-term construction, and many types of business services. In such cases, the residence of the enterprise is determined from its base of operations, rather than the point of delivery or location of mobile equipment, unless the activities at the point of delivery are sufficiently substantial to amount to a branch, as discussed in paragraphs 5.53 to 5.55. For example, an institutional unit that operates ships on the high seas and various territorial waters has its residence determined according to the criteria in paragraphs 5.266 to 5.270, and the economy of residence is not necessarily the same as the location where the ships spend the most time or the territory of registration of the ships. Additionally, the enterprise that operates the ships is not necessarily the same as the enterprise that owns the ships, such as where the ship operator has an operating lease from the ship owner, who is resident in another economy. The residence of the enterprise that

owns the ship is also determined according to the criteria in paragraphs 5.266 to 5.270. Flags of convenience used by enterprises do not determine the residence of the operator, and indeed a single shipping operator may have ships registered in several economies. Similarly, the residence of enterprises that charter ships is determined by the location of its own base of operations, rather than the flags or locations of particular ships. The base of operations does not necessarily equate to the location from which the enterprise is managed. A company operating mobile equipment may be legally domiciled in one economy but managed from another economy.

Residence of other institutional units

General government

5.272 General government includes operations outside the home territory, such as embassies, consulates, military bases, and other enclaves of foreign governments, including those providing training and other forms of assistance. Usually, these operations are not separate institutional units, but even if they were, they are residents of their home territory, rather than the host territory in which they are physically located. This treatment is adopted because they usually have some degree of immunity from the host territory's laws and are deemed under international law to be extensions of the home government's territory. However, an unit created by a government under the laws of the host jurisdiction is an unit resident in the host economy and not part of the general government sector in either economy. The residence of the employees of these operations is discussed in paragraph 5.261.

International organizations

5.273 International organizations are defined in paragraphs 5.239 to 5.243. International organizations are resident in an economic territory of their own, and not of the economy in which they are physically located. This treatment applies to both international organizations located in only one territory and those located in two or more territories. The residence of the employees of these operations is discussed in paragraph 5.262.

5.274 An international organization that operates peacekeeping and other military forces or that acts as the interim administration in a territory remains classified as an international organization and is non-resident in that territory, even if it undertakes general government functions. In cases in which these organizations are significant, it may be desirable to identify them separately.

5.275 A separately constituted pension fund of an international organization is not treated as an international organization, but is regarded as a financial corporation. Its residence is determined according to the general principles in paragraphs 5.266 to 5.270 – that is, it is a resident of the territory in which it is located, and if it lacks a physical presence, it is a resident of the economy in which it is incorporated or registered.

Regional international organizations

5.276 Some international organizations cover a group of economies in a particular region, such as with economic or currency unions. If statistics are prepared for that region as a whole, these regional organizations are residents of the region as a whole, even though they are not residents of any member economy.

5.277 When producing global or regional totals, international organizations are combined with national data.

NPISHs

5.278 An NPISH has a centre of economic interest in the economy in which the institution was legally created and is officially recognized and recorded as a legal or social entity. In practice, residence of the vast majority of NPISHs may be determined without ambiguity. When an NPISH is engaged in charity or relief work on an international scale, it may maintain substantial operations in individual territories that may amount to branches (see discussion in paragraph 5.53 to 5.55). Such a branch is usually financed largely or entirely by current or capital transfers from abroad. NPISHs are not international organizations, which are limited to

those created by governments.

3. Assets and liabilities held by groups that include both residents and non-residents

5.279 Some financial assets have owners who are residents of different economic territories. Examples include joint bank accounts or other cases in which an account holder authorizes relatives to withdraw funds from the account. In these cases, the allocation between the owners may be unclear:

- In the case of deposits of emigrant workers in their home economies that are freely usable by family members resident in the home economies, a convention can be adopted to treat these assets as being held by residents of the home economy.
- Similarly, for deposits of emigrant workers in the host economy that are freely usable by family members, a convention can be adopted to treat these as being held by a resident of the host economy.

4. Changes in residence of institutional units

Change in residence of individuals

5.280 Households or their individual members can change their territory of residence. Because all members of a household are residents of the same territory, the movement of an individual may require that the person leave one household and become a member of another household. The change in the residence by an owner of an asset or by someone who has a liability requires a reclassification, because no exchange is made between two parties and, accordingly, no transaction occurs.

Assets moved between institutional units

5.281 For what are called "corporate migrations", two situations can occur: one in which assets are moved between institutional units and another in which the corporation itself changes residence. When a company is said to relocate to another jurisdiction, it usually involves transactions to move assets from a corporation in one economy to a related corporation in a different economy. That is, the ownership of assets is moved, rather than the unit changing residence.

Change in residence of units other than persons

5.282 In contrast, in some rare cases, a unit changes its residence (i.e., without moving assets to ownership by another unit). These cases could arise from exchanges of territory between governments. Additionally, corporation or trust law in some cases allows unit emigration or immigration (e.g., it could be permitted within an economic union, but is not generally the case for most jurisdictions). The effects on the assets and liabilities would be treated as other changes in volume of assets and liabilities in the same way as for the change in residence of an individual, recorded in the other changes in assets and liabilities account.

5. Alternatives to the residence concept

5.283 With globalization, an increasing number of units have connections to two or more economies. Some additional data sets provide alternatives to the residence concept, such as those based on ownership (as in data on the activities of multinational enterprise (MNE) groups) and provide additional information. In consolidated banking statistics, banking groups and their global operations are reported as a single unit (i.e., all the controlled affiliates of an enterprise are allocated to the economy of the head office). See also paragraphs 29.28 to 29.33.

Chapter 6: Enterprises, establishments and industries

A. Introduction

6.1 Institutional units are defined in chapter 5 on Institutional units and sectors, economic territory and residence. The present chapter is concerned with production activities and the units that undertake them, starting with institutional units and then considering parts of institutional units. ***An enterprise is the view of an institutional unit engaged in the production of goods and/or services. The term enterprise may refer to a corporation, a quasi-corporation, a non-profit organisation (NPI), or an unincorporated enterprise.*** Since corporations and NPIs other than NPISHs are primarily set up to engage in production, the whole of their accounting information relates to production and associated accumulation activities. Government, the central bank, households and NPISHs necessarily engage in consumption and may engage in production also; indeed government, the central bank and NPISHs always engage in production and many, but not all, households do. As explained in chapter 5, whenever the necessary accounting information exists, the production activity of these units selling at economically significant prices is separated from their other activities into a quasi-corporation. It is when this separation is not possible that an unincorporated enterprise exists within the government unit, the central bank, household or NPISH. It is thus possible to define an unincorporated enterprise as follows. ***An unincorporated enterprise represents the production activity of a government unit, the central bank, non-profit institution serving households (NPISH) or household that cannot be treated separately as the production activity of a quasi-corporation.***

6.2 The majority of enterprises by number engages in only one sort of production. The majority of production, though, is carried out by a relatively small number of large corporations that undertake many different kinds of production, there being virtually no upper limit to the extent of diversity of production in a large enterprise. If enterprises are grouped together on the basis of their principal activities, at least some of the resulting groupings are likely to be very heterogeneous with respect to the type of production processes carried out and also the goods and services produced. Thus, for analyses of production in which the technology of production plays an important role, it is necessary to work with groups of producers that are engaged in essentially the same kind of production. This requirement means that some institutional units must be partitioned into smaller and more homogeneous units, which the SNA defines as establishments. ***An establishment is an enterprise, or part of an enterprise, that is situated in a single location and in which only a single productive activity is carried out or in which the principal productive activity accounts for most of the value added (also known as a local kind-of-activity unit)***. Further, the SNA defines industries in terms of establishments. ***An industry consists of a group of establishments engaged in the same, or similar, kinds of production activity. Importantly, it is not reserved to market producers; it can also refer to non-market producers.*** In the SNA, production accounts and generation of earned income accounts are compiled for industries as well as sectors.

6.3 This chapter first discusses productive activity and its classification in order to lay the ground for defining establishments and subsequently industries. All enterprises require some basic, routine services to support their production activities. When they are provided in house they are called ancillary activities. The recording of ancillary activities follows a number of conventions depending on exactly how they are provided. Ancillary activities are described in section D.

6.4 The definitions that emerge, as well as the underlying definitions of kinds of activities and of statistical units other than establishments, are consistent with the definitions in *ISIC*. Any slight differences in wording between this chapter and the "Introduction" to the *ISIC* are noted and explained in the appropriate places below. Here and elsewhere reference is also made to the *CPC*, which is the classification of products used in the SNA.

B. Productive activities

6.5 Production in the integrated framework if the SNA, as will be discussed in detail in chapter 7 on Production account, consists of processes or activities carried out under the control and responsibility of institutional units that use inputs of labour, capital, goods and services to produce outputs of goods and services. Any

such activity may be described, and classified, with reference to various characteristics, for example:

a. Type of goods or services produced as outputs,

b. Type of inputs used or consumed,

c. Technique of production employed,

d. Ways in which the outputs are used.

The same goods or services may be produced using different methods of production. Certain types of goods may be produced from quite different inputs; for example, sugar may be produced from sugar cane or from sugar beet, or electricity from coal, oil, nuclear power stations or from hydroelectric plants and various other ways of generating renewable energy (wind turbines, solar panels, etc.). Many production processes also produce joint products, such as meat and hides, whose uses are quite different.

1. The classification of activities in the SNA

6.6 The classification of production activities used in the SNA is *ISIC*. The criteria used in *ISIC* to delineate each of its four levels of the classification are complex. The structure of *ISIC Rev.4* consists of 21 Sections, 88 Divisions, 238 Groups and 419 Classes. At the Division and Group levels, substantial weight is placed on the nature of the good or service that is produced as the principal product of the activity in question by referring to the physical composition and stage of production of the item and the needs served by the item. This criterion furnishes the basis for grouping producer units according to similarities in, and links between, the raw materials consumed and the sources of demand for the items. As well, two other major criteria are considered at these levels: the uses to which the goods and services are put, and the inputs, the process and the technology of production.

6.7 While it is not necessary for purposes of this chapter to explain the concept of an activity in any detail, it is necessary to clarify the fundamental distinction between principal and secondary activities on the one hand and ancillary activities on the other.

2. Principal and secondary activities

Principal activities

6.8 ***The principal activity of (a part of) an enterprise unit is the activity whose value added exceeds that of any other activity carried out within the same unit.*** The classification of the principal activity is determined by reference to *ISIC*, first at the highest level of the classification and then at more detailed levels. The principal activity of an enterprise consists of the principal product and any by-products, that is, products necessarily produced together with principal products. The output of the principal activity must consist of goods or services that are capable of being delivered to other units even though they may be used for own consumption or own capital formation.

Secondary activities

6.9 ***A secondary activity is an activity carried out by (a part of) an enterprise in addition to the principal activity and whose output, like that of the principal activity, must be suitable for delivery to other units.*** The value added of a secondary activity must be less than that of the principal activity, by definition of the latter. The output of the secondary activity is a secondary product. Most producer units produce at least some secondary products.

3. Ancillary activities

6.10 As its name implies, an ancillary activity is incidental to the main activity of an enterprise. It facilitates the efficient running of the enterprise but does not normally result in goods and services that can be marketed.

For enterprises that are relatively small and have only a single location, ancillary activities are not separately identified. For larger enterprises with multiple locations, it may be useful to treat ancillary activities in the same way as a secondary or even a principal product. A detailed discussion of the recording of ancillary activities is given in section D after the discussion on the recording of primary and secondary production is complete.

C. Partitioning enterprises into more homogeneous units

6.11 Although it is possible to classify enterprises according to their principal activities using the *ISIC* and to group them into "industries", some of the resulting "industries" are likely to be very heterogeneous because some enterprises may have several secondary activities that are quite different from their principal activities. In order to obtain groups of producers whose activities are more homogeneous, enterprises have to be partitioned into smaller and more homogeneous units.

1. Types of production units

Kind-of-activity units

6.12 One way to partition an enterprise is by reference to activities. A unit resulting from such a partitioning is called a kind-of-activity unit (KAU). ***A kind-of-activity unit is an enterprise, or a part of an enterprise, that engages in only one kind of productive activity or in which the principal productive activity accounts for most of the value added. A kind-of-activity unit must be more homogeneous with respect to output, cost structure and technology of production than the enterprise as a whole.*** Each enterprise must, by definition, consist of one or more kind-of-activity units.

Local units

6.13 Enterprises often engage in productive activity at more than one location, and for some purposes it may be useful to partition them accordingly. Thus, ***a local unit is an enterprise, or a part of an enterprise, that engages in productive activity at or from one location.*** The definition has only one dimension in that it does not refer to the kind of activity that is carried out. Location may be interpreted according to the purpose, narrowly, such as a specific address, or more broadly, such as within a province, state, county, etc.

Establishments

6.14 The establishment combines both the kind-of-activity dimension and the locality dimension. ***An establishment is an enterprise, or part of an enterprise, that is situated in a single location and in which only a single productive activity is carried out or in which the principal productive activity accounts for most of the value added (also known as a local kind-of-activity unit).***

6.15 Although the definition of an establishment allows for the possibility that there may be one or more secondary activities carried out, they should be on a small scale compared with the principal activity. If a secondary activity within an enterprise is as important, or nearly as important, as the principal activity, then that activity should be treated as taking place within a separate establishment from that in which the principal activity takes place.

6.16 Thus, establishments are designed to be units that provide data that are more suitable for analyses of production in which the technology of production plays an important role. However, it may still be necessary to transform the resulting data subsequently for purposes of input-output analysis, as explained briefly below in describing the unit of homogeneous production and in more detail in chapter 36 on Input-output tables.

6.17 In practice, an establishment may usually be identified with an individual workplace in which a particular kind of productive activity is carried out: an individual farm, mine, quarry, factory, plant, shop, store, construction site, transport depot, airport, garage, bank, office, clinic, etc.

2. Data and accounts for establishments

6.18 The only data that can meaningfully be compiled for an establishment relate to its production activities. They include the following:

a. The items included in the production account and the generation of earned income account;

b. Statistics of numbers of employees, types of employees and hours worked;

c. Estimates of the stock of non-financial assets, including natural resources, used;

d. Estimates of changes in inventories and gross fixed capital formation undertaken.

6.19 The compilation of a production account and a generation of earned income account implies that it must be feasible to calculate output and intermediate consumption and thus value added and also remuneration of employees, taxes on production and imports, subsidies and the operating surplus or mixed income. In principle, it must be feasible to collect at least the above kinds of statistics for an establishment, even if they may not always be available, or needed, in practice.

3. Application of the principles in specific situations

6.20 The application of the principles given above for partitioning an enterprise into establishments is not always straightforward. This section discusses several situations in which the organization of production is such that the application is particularly difficult.

Establishments within integrated enterprises

6.21 A horizontally integrated enterprise is one in which several different kinds of activities that produce different kinds of goods or services for sale on the market are carried out simultaneously using the same factors of production. This definition is consistent with *ISIC Rev.4* which reads in part:

Horizontal integration occurs when an activity results in end-products with different characteristics. This could theoretically be interpreted as activities carried out simultaneously using the same factors of production. In this case, it will not be possible to separate them statistically into different processes, assign them to different units or generally provide separate data for these activities. Another example would be the production of electricity through a waste incineration process. The activity of waste disposal and the activity of electricity production cannot be separated in this case.

6.22 Within the SNA, a separate establishment should preferably be identified for each different kind of activity.

6.23 A vertically integrated enterprise is one in which different stages of production, which are usually carried out by different enterprises, are carried out in succession by different parts of the same enterprise. The output of one stage becomes an input into the next stage, only the output from the final stage being actually sold on the market. *ISIC Rev.4* describes vertically integrated enterprises as follows:

Vertical integration of activities occurs where the different stages of production are carried out in succession by the same unit and where the output of one process serves as input to the next. Examples of common vertical integration include tree felling and subsequent on-site sawmilling, a clay pit combined with a brickworks, or production of synthetic fibres in a textile mill.

6.24 In *ISIC Rev.4*, vertical integration should be treated like any other form of multiple activities. A unit with a vertically integrated chain of activities should be classified to the class corresponding to the principal activity within this chain, that is, to the activity accounting for the largest share of value added, as determined by the top-down method. This treatment has changed from previous versions of *ISIC*. It should be noted that the term "activity" in this context is used for each step in the production process that is defined in a separate *ISIC* class, even though the output of each step may not be intended for sale.

6.25 If value added or substitutes for the individual steps in a vertically integrated process cannot be determined

directly from accounts maintained by the unit itself, comparisons with other units (for example, based on market prices for intermediate and final products) could be used. The same precautions for using substitutes as listed above apply here. If it is still impossible to determine the share of value added for the different stages in the chain of production activities, default assignments for typical forms of vertical integration can be applied.

6.26 While the procedure for the treatment of vertically integrated activities could be applied to any unit, it should be noted that the SNA recommends that when a vertically integrated enterprise spans two or more sections of *ISIC*, at least one establishment must be distinguished within each section. With such a treatment, activities of units engaged in vertically integrated activities will not cross section boundaries of *ISIC*.

6.27 From an accounting point of view it can be difficult to partition a vertically integrated enterprise into establishments because values have to be imputed for the outputs from the earlier stages of production which are not actually sold on the market and which become intermediate inputs into later stages. Some of these enterprises may record the intra-enterprise deliveries at prices that reflect market values, but others may not. Even if adequate data are available on the costs incurred at each stage of production, it may be difficult to decide what is the appropriate way in which to allocate the operating surplus of the enterprise among the various stages. One possibility is that a uniform rate of operating surplus be applied to the costs incurred at each stage.

6.28 Despite the practical difficulties involved in partitioning vertically integrated enterprises into establishments, it is recommended in the integrated framework of the SNA, as noted in the section of *ISIC* quoted above, that when a vertically integrated enterprise spans two or more sections of the *ISIC*, at least one establishment should preferably be distinguished within each section. *ISIC* sections correspond to broad industry groups such as agriculture, fishing, mining and quarrying, manufacturing, etc.

Establishments owned by general government

6.29 Government units, especially central government units, may be particularly large and complex in terms of the kinds of activities in which they engage. The principles outlined above should preferably be applied consistently and systematically to government units. The procedures to be followed when dealing with the main kinds of producer units owned by government may be summarized as follows.

6.30 If an unincorporated enterprise of government is a market producer and there is sufficient information available to treat it as a quasi-corporation, it should be treated as a publicly controlled unit in the non-financial or financial corporations sectors as appropriate. The usual conventions about distinguishing different establishments within the quasi-corporation apply.

6.31 An example of an unincorporated market enterprise that can be treated as a quasi-corporation is a municipal swimming pool that is independently managed and whose accounts permit its income, saving and capital to be measured separately from government so that flows of income, or capital, between the unit and government can be identified.

6.32 If an unincorporated enterprise of government is a market producer and there is insufficient information to treat it as a quasi-corporation, or if the unincorporated enterprise is a non-market producer, then it remains within the general government sector but it should preferably be treated as an establishment in its own right and allocated to the appropriate industry.

6.33 Non-market producers such as public administration, defence, health and education providing final goods or services should preferably be partitioned into establishments using the activity classification given in Sections O, P and Q of *ISIC Rev.4*. Agencies of central government may be dispersed over the country as a whole in which case it may be desirable to distinguish different establishments for activities that are carried out in different locations.

6.34 When a government agency supplies goods to other government agencies it should preferably be treated as a separate establishment and classified under the appropriate heading of *ISIC*. This applies to the production of munitions or weapons, printed documents or stationery, roads or other structures, etc. A government that produces its own weapons to supply to its own armed forces is, in effect, a vertically integrated enterprise that spans two or more sections of *ISIC*. Therefore, at least one separate establishment should preferably be

distinguished in each heading. The same argument applies to a government printing office and other goods producers owned by government.

4. More general considerations about the choice of units for describing the production process

6.35 One of the challenges brought about by the rapidly changing nature of production and particular the ways in which enterprises produce goods and services has put into question the SNA's preference for the use of the establishment as the preferred unit to compile industrial statistics, and in particular, supply and use tables. In addition, there are diverging practices across countries. Several countries use, for example, (an approximation of) kind-of-activity units, enterprises or even enterprise groups as the basic statistical unit underlying their supply and use tables. In this respect, a change can also be observed in the collection of source data, from survey data to administrative records, the latter typically relating to enterprises or legal units rather than establishments. Furthermore, it has become increasingly important to link data from supply and use tables with data from institutional sector accounts, i.e., to link the production of goods and services and generation of earned income with distributional aspects and finance.

6.36 The above considerations have led to a renewed interest in the question of which guidance to provide in relation to the use of units in the description of the process of production and generation of earned income. It was however not possible to arrive at an agreed response to change the SNA's preference for establishments, which is not surprising in view of the quite diverging user needs as well as the differences in the collection of source data and the compilation of statistics across countries. For these reasons, the issue of statistical units has been put on the research agenda (see Annex 5).

D. Ancillary activities

6.37 As noted in section B, ancillary activities require special consideration because of the different ways of recording that are recommended depending on circumstances. As a preliminary step, though, it is useful to review exactly what is meant by an ancillary activity. Essentially, they are the basic services that every enterprise needs to have in order to operate effectively. The sorts of services referred to include keeping records, files or accounts in written form or on computers; providing electronic and traditional written communication facilities; purchasing materials and equipment; hiring, training, managing and paying employees; storing materials or equipment: warehousing; transporting goods or persons inside or outside the producer unit; promoting sales; cleaning and maintenance of buildings and other structures; repairing and servicing machinery and equipment; and providing security and surveillance.

6.38 These types of services can be produced in house or can be purchased on the market from specialist service producers though, in practice, the requisite services may not be readily available in the right quantities on local markets. When the services are produced in house, they are termed ancillary activities**. *An ancillary activity is a supporting activity undertaken within an enterprise in order to create the conditions within which the principal or secondary activities can be carried out.*** In addition, ancillary activities have certain common characteristics related to their output. These additional characteristics include:

a. The output of an ancillary activity is not intended for use outside the enterprise;

b. Ancillary activities typically produce outputs that are commonly found as inputs into almost any kind of productive activity;

c. Ancillary activities produce services (and, as exceptions, goods that do not become a physical part of the output of the principal or secondary activity) as output;

d. The value of ancillary activity output is likely to be small compared with that of the principal or secondary activities of an enterprise.

6.39 The defining characteristics that ancillary activities support the principal and secondary activities of an enterprise and are used within the enterprise are by no means sufficient to identify an ancillary activity. There are many kinds of activities whose outputs are entirely consumed within the same enterprise but which could

not possibly be considered as ancillary. Goods are not commonly used as inputs in the same way as services such as accounting, transportation or cleaning. For example, an enterprise may produce milk, all of which is processed into butter or cheese within the same enterprise. However, milk production cannot be considered an ancillary activity, because milk is a particular kind of input found only in special types of productive activity. In general, goods that become embodied in the output of the principal or secondary activities are not outputs of ancillary activities.

6.40 Certain activities, although common, are not so common as to be considered ancillary. Many enterprises produce their own machinery and equipment, build their own structures and carry out their own research and development. These activities are not to be treated as ancillary, whether carried out centrally or not, as they are not found frequently and extensively in all kinds of enterprises, small as well as large.

Recording (or not) the output of ancillary activities

6.41 An ancillary activity is not undertaken for its own sake but purely in order to provide supporting services for the principal or secondary activities with which it is associated. If all the ancillary activity is undertaken in the establishment where its output is used, the ancillary activity is regarded as an integral part of the principal or secondary activities with which it is associated. As a result:

a. The output of an ancillary activity is not explicitly recognized and recorded separately in the integrated framework of the SNA. It follows that the use of this output is also not recorded;

b. All the inputs consumed by an ancillary activity, materials, labour, depreciation and depletion, etc., are treated as inputs into the principal or secondary activity that it supports.

In this case it is not possible to identify the value added of an ancillary activity because that value added is combined with the value added of the principal or secondary activity.

6.42 When the production of an enterprise takes place in two or more different establishments, certain ancillary activities may be carried out centrally for the benefit of all the establishments collectively. For example, the purchasing, sales, accounts, computing, maintenance or other departments of an enterprise may all be the responsibility of a head office located separately from the establishments in which the principal or secondary activities of the enterprise are carried out.

6.43 If an establishment undertaking purely ancillary activities is statistically observable, in that separate accounts for the production it undertakes are readily available, or if it is in a geographically different location from the establishments it serves, it may be desirable and useful to consider it as a separate unit and allocate it to the industrial classification corresponding to its principal activity. However, it is recommended that statisticians do not make extraordinary efforts to create separate establishments for these activities artificially in the absence of suitable basic data being available.

6.44 When such a unit is recognized, the ancillary activity is recognized as a primary output. The value of its output should be derived on a sum of costs basis, including the cost of the capital used in the unit. The output will be deemed to be non-market output when the parent enterprise is a non-market enterprise and market otherwise. The output of the ancillary unit is treated as intermediate consumption of the establishments it serves and should be allocated across them using an appropriate indicator such as the output, value added or labour input of these establishments.

6.45 It may be appropriate to treat specialized agencies serving central government as a whole, for example, computer or communications agencies, which tend to be large, as separate establishments.

6.46 Even when an ancillary activity is undertaken in the establishment where it is used, it may grow to the point that it has the capacity to provide services outside the enterprise. For example, a computer processing unit may develop in-house capabilities for which there is an outside demand. When an activity starts to provide a proportion of its services to outsiders, the part of the output that is sold has to be treated as secondary rather than ancillary output.

The role of ancillary activities in the SNA

6.47 The production accounts of the integrated framework of the SNA do not provide comprehensive information about the production of services treated in some cases as ancillary services. It is therefore difficult to obtain information about their role in the economy. For example, it is difficult to know how much output is produced, how many persons are engaged in such activities, how many resources are consumed, etc. This may be regarded as a serious disadvantage for certain purposes, such as analysing the impact of "information technology" on productivity when the processing and communication of information are typical ancillary activities or when looking at the role of freight transport. For some purposes, a thematic account may be compiled that makes estimates of all activities of a certain type regardless of whether they are ancillary or not. The overall measure of value added does not alter because both output and intermediate consumption increase by the same amount but a more inclusive picture of the role of the activity in the economy can be obtained. There is a discussion on the role of thematic accounts in chapter 38 on Thematic and extended accounts.

E. Industries

6.48 Industries are defined in the SNA in the same way as in *ISIC*: ***an industry consists of a group of establishments engaged in the same, or similar, kinds of activity. Importantly, it is not reserved to market producers; it can also refer to non-market producers.*** At the most detailed level of classification, an industry consists of all the establishments falling within a single Class of *ISIC*. At higher levels of aggregation corresponding to the Groups, Divisions and, ultimately, Sections of the *ISIC*, industries consist of a number of establishments engaged in similar types of activities.

1. Market, own account and non-market producers

6.49 As noted in the above, the term "industry" is not reserved for market producers. An industry, as defined in the *ISIC* and in the SNA, consists of a number of establishments engaged in the same type of production, whether the institutional units to which they belong are market producers or not. The distinction between market and other production is a different dimension of production and economic activity. For example, the health industry in a particular country may consist of a number of establishments, some of which are market producers while others are non-market producers. Because the distinction between market and other kinds of production is based on a different criterion from the nature of activity itself, it is possible to cross-classify establishments by type of activity and by whether they are market producers, non-market producers or producers for own final use.

2. Industries and products

6.50 As already mentioned, a one-to-one correspondence does not exist between activities and products and hence between industries and products. Certain activities produce more than one product simultaneously, while the same product may sometimes be produced by using different techniques of production.

6.51 When two or more products are produced simultaneously by a single productive activity they are "joint products". Examples of joint products are meat and hides produced by slaughtering animals or sugar and molasses produced by refining sugar canes. The by-product from one activity may also be produced by other activities, but there are examples of by-products, such as molasses, that are produced exclusively as the by-products of one particular activity.

6.52 The relationship between an activity and a product classification is exemplified by that between the *ISIC* and the *CPC*. The *CPC* is a classification based on the physical characteristics of goods or on the nature of the services rendered, while the *ISIC* also takes into account the inputs in the production process and the technology used in the production process. In the development of the *CPC*, it is intended that each good or service distinguished in the *CPC* is defined in such a way that it is normally produced by only one activity as defined in *ISIC*. However, due to different types of criteria employed, this is not always possible. An example would be the product of mushrooms, which can be produced by controlled growing, that is, an

activity classified in Agriculture in *ISIC*, or by simply gathering wild growing mushrooms, an activity classified in Forestry. More detailed national classifications may distinguish different forms of energy production in *ISIC*, based on different technologies, resulting in separate activities for the operation of hydroelectric power plants, nuclear power plants, etc. The output of all these activities, however, would be the single product electricity.

6.53 Conversely, each activity of the *ISIC*, no matter how narrowly defined, will tend to produce a number of products as defined in the *CPC*, although they are often clustered within the *CPC* structure and could be perceived as one "type" of product. As far as practically possible, an attempt is made to establish a correspondence between the two classifications, by allocating to each category of the *CPC* a reference to the *ISIC* class in which the good or service is mainly produced. However, due to the reasons outlined above, this typically does not result in a one-to-one correspondence. The majority of links between *ISIC* and *CPC* will tend to be one-to-many links, with a few cases requiring many-to-one links. It is possible to force this correspondence into a stricter relationship by selecting one link out of the many-to-one correspondence. This selection may facilitate data conversion, but is not a real description of the link between the two classifications.

F. Units of homogeneous production

6.54 In most fields of statistics the choice of statistical unit, and methodology used, are strongly influenced by the purposes for which the resulting statistics are to be used. For purposes of input-output analysis, the optimal situation would be one in which each producer unit were engaged in only a single productive activity so that an industry could be formed by grouping together all the units engaged in a particular type of production without the intrusion of any secondary activities. Such a unit is called a "unit of homogeneous production".

6.55 Although the unit of homogeneous production may be the optimal unit for purposes of certain kinds of analysis, particularly input-output analysis, it may not be possible to collect directly from the enterprise or establishment the accounting data corresponding to units of homogeneous production. Such data may have to be estimated subsequently by transforming the data supplied by enterprises on the basis of various assumptions or hypotheses. Units that are constructed by statistical manipulation of the data collected by the agency are called analytical units.

6.56 If a producer unit carries out a principal activity and also one or more secondary activities, it will be partitioned into the same number of units of homogeneous production. If it is desired to compile production accounts and input-output tables by region, it is necessary to treat units of homogeneous production located in different places as separate units even though they may be engaged in the same activity and belong to the same institutional unit.

6.57 Chapter 36 on Input-output tables discusses the estimation of analytical units for use in an input-output context.

C. Structure of the framework and the sequence of economic accounts

Chapter 7: Production account

A. Introduction

7.1 The production account is the starting point for the sequence of economic accounts for institutional units and sectors displaying how income is generated, distributed and used throughout the economy. Activities defined as production therefore determine the extent of GDP and the level of income for the economy. In concept, the economy-wide production account is the aggregation of a similar account for each production unit. Importantly, while production accounts can be compiled for an individual institutional unit as well as for sectors, they can also be compiled for establishments and thus for industries. It is this feature that allows the study of industrial activity in the economy and permits the compilation of supply and use tables and input-output tables.

7.2 The production account is linked to the definition of production. ***Production is an activity carried out under the responsibility, control and management of an institutional unit, that uses inputs of labour, capital and goods and services to produce outputs of goods and services.*** The production account shows the output of production and the various inputs to it. To do this, three concepts need clarifying.

7.3 The first concept to be clarified is what constitutes production within the integrated framework of the SNA. This delineation is referred to as the production boundary of the integrated framework of national accounts. Thereafter several key types of production need to be identified depending on whether production is for sale, for own use or is made available to others at little or no cost.

7.4 The next concept to be addressed is how output is to be valued. Key to this question is the role played by the various types of taxes imposed by (and subsidies given by) government on products and on the activity of production.

7.5 The third major concept to be considered is how the production process adds to the value of goods and services and leads to the generation of income. Does the whole contribution of labour and capital add to the value of these goods and services or should the fact that most capital declines in value as it is used need to be taken into account?

7.6 The general format of an account in the sequence of economic accounts is to show how revenues are received and, after expenditures are deducted, a balancing item is left. Because the production account is the first in the sequence of economic accounts, it is the first time the concept of a balancing item appears. The importance of balancing items in general and the one in this account in particular is also discussed before considering each of the entries of the production account in turn.

7.7 The production account for institutional units and sectors is illustrated in table 7.1. It contains only three items apart from the balancing item. The output from production is recorded under revenues on the right-hand side of the account. This item may be disaggregated to distinguish different kinds of output. For example, non-market output should be shown separately from market output and output for own final use in the sector accounts, when possible. The expenditures recorded on the left-hand side of the account consist of intermediate consumption, depreciation and depletion. These latter items may also be disaggregated, by distinguishing for which types of output these items are used as an input.

7.8 The balancing item in the production account is value added. It can be measured either gross or net, that is, before or after deducting depreciation and depletion:

- Gross value added is the value of output minus the value of intermediate consumption;
- Net value added is the value of output minus the values of intermediate consumption, depreciation and depletion.

7.9 As value added is intended to measure the value created by a process of production, it ought to be measured net, since depreciation and depletion are costs of production. However, as explained in sections H and I of this chapter, depreciation as well as depletion may be less straightforward to measure in practice. Furthermore, the use of gross measures for policy and analysis is a longstanding tradition. Provision has therefore been made for value added to be measured gross as well as net. It follows that provision has also to be made for the balancing items in subsequent accounts of the sequence of economic accounts to be measured either gross or net of depreciation and depletion.

Table 7.1: The production account – expenditures

Expenditures

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
P1	Output								3 617	3 617
P11	Market output								3 075	3 075
P12	Output for own final use								147	147
P13	Non-market output								395	395
P2	Intermediate consumption	1 477	52	220	115	17	1 881			1 881
D21	Taxes on products								141	141
D31	Subsidies on products (-)								- 8	- 8
B1g	Value added, gross / Gross domestic product	1 331	94	138	155	18	1 869			1 869
P51d	Depreciation	157	12	27	23	3	222			222
P8	Depletion	30			0		30			30
B1n	*Value added, net / Net domestic product*	1 144	82	111	132	15	1 617			1 617

Table 7.1 (cont): The production account - revenues

Revenues

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
P1	Output	2 808	146	358	270	35	3 617			3 617
P11	Market output	2 808	144	0	123	0	3 075			3 075
P12	Output for own final use	0	0	0	147	0	147			147
P13	Non-market output		2	358		35	395			395
P2	Intermediate consumption								1 881	1 881
D21	Taxes on products						141			141
D31	Subsidies on products (-)						- 8			- 8

B. The concept of production

1. Production as an economic activity

7.10 Production can be described in general terms as an activity in which an enterprise uses inputs to produce outputs. The economic analysis of production is mainly concerned with activities that produce outputs of a kind that can

be delivered or provided to other institutional units. Unless outputs are produced that can be supplied to other units, either individually or collectively, there can be no division of labour, no specialization of production and no gains from trading. There are two main kinds of output, namely goods and services, and it is necessary to examine their characteristics in order to be able to delineate activities that are productive in an economic sense from other activities. Collectively, goods and services are described as products.

7.11 In the SNA, it is seldom if ever necessary to make a clear distinction between goods and services but in making the link to other data sets it is often necessary to understand which products have been treated as goods and which as services.

7.12 Industrial classifications, such as *ISIC*, identify a group of manufacturing industries. However, many of these industries also produce services. For example, some aircraft engine manufacturers may both fabricate aircraft engines and repair and service existing engines. When goods dispatched to another unit for processing do not change ownership, the work done on them constitutes a service even though it may be undertaken by a manufacturing industry. The fact that the processing is classified as a service does not prevent the processor from being classified within manufacturing.

7.13 Similarly, some service-producing industries may produce products that have many of the characteristics of goods. For convenience, the products of these industries are described in the SNA as knowledge-capturing products.

7.14 ***Products are goods and services (including knowledge-capturing products) that result from a process of production.***

Goods

7.15 ***Goods are physical, produced objects, over which ownership rights can be established and whose ownership can be transferred from one institutional unit to another by engaging in transactions on markets.*** They may be used to satisfy the needs or wants of households or the community or used to produce other goods or services. The production and exchange of goods are quite separate activities. Some goods may never be exchanged while others may be bought and sold numerous times. The production of a good can always be separated from its subsequent sale or resale. Electricity and heat are also classified as goods.

Services

7.16 The production of services must be confined to activities that are capable of being carried out by one unit for the benefit of another. Otherwise, service industries could not develop and there could be no markets for services. It is also possible for a unit to produce a service for its own consumption provided that the type of activity is such that it could have been carried out by another unit.

7.17 ***Services are the results from a production activity that changes the conditions of the consuming units, or facilitates the exchange of products, non-produced non-financial assets or financial assets. Services are not generally separate items over which ownership rights can be established and cannot generally be separated from their production.*** These types of service may be described as change-effecting services and margin services respectively. Change-effecting services are outputs produced to order and typically consist of changes in the conditions of the consuming units realized by the activities of producers at the demand of the consumers. Change-effecting services are not separate items over which ownership rights can be established. They cannot be traded separately from their production. By the time their production is completed, they must have been provided to the consumers.

7.18 The changes that consumers of services engage the producers to bring about can take a variety of different forms as follows:

- Changes in the condition of the consumer's goods: the producer works directly on goods owned by the consumer by transporting, cleaning, repairing or otherwise transforming them;
- Changes in the physical condition of persons: the producer transports the persons, provides them with accommodation, provides them with medical or surgical treatments, improves their appearance, etc.;

- Changes in the mental condition of persons: the producer provides education, information, advice, entertainment or similar services in a face to face manner.

7.19 The changes may be temporary or permanent. For example, medical or education services may result in permanent changes in the condition of the consumers from which benefits may be derived over many years. On the other hand, attending a football match is a short-lived experience. In general, the changes may be presumed to be improvements, as services are produced at the demand of the consumers. The improvements usually become embodied in the persons of the consumers or the goods they own and are not separate items that belong to the producer. Such improvements cannot be held in inventories by the producer or traded separately from their production.

7.20 A single process of production may provide services to a group of persons, or units, simultaneously. For example, groups of persons or goods belonging to different institutional units may be transported together in the same plane, ship, train or other vehicle. People may be instructed or entertained in groups by attending the same class, lecture or performance. Certain services are provided collectively to the community as a whole, or large sections of the community, for example, the maintenance of law and order, and defence.

7.21 Margin services result when one institutional unit facilitates the change of ownership of goods, knowledge-capturing products, some services or financial assets between two other institutional units. Margin services are provided by wholesalers and retailers and by many types of financial corporations. Margin services resemble change-effecting services in that they are not separate items over which ownership rights can be established. They cannot be traded separately from their production. By the time their production is completed they must have been provided to the consumers.

Knowledge-capturing products

7.22 Knowledge-capturing products concern the provision, storage, communication and dissemination of information, data, advice and entertainment in such a way that the consuming unit can access the knowledge repeatedly. The industries that produce the products are those concerned with the provision, storage, communication and dissemination of information, data, advice and entertainment in the broadest sense of those terms including the production of general or specialized information, news, consultancy reports, computer programs, movies, music, etc. The outputs of these industries, over which ownership rights may be established, are often stored on physical objects (whether on paper or on electronic media) that can be traded like ordinary goods. They have many of the characteristics of goods in that ownership rights over these products can be established and they can be used repeatedly. Whether characterized as goods or services, these products possess the essential common characteristic that they can be produced by one unit and supplied to another, thus making possible division of labour and the emergence of markets. It is important to note that these knowledge-capturing products should be recorded as either goods or services, and that they should not be classified as a distinct category of products.

2. The production boundary

7.23 Given the general characteristics of the goods and services produced as outputs, it becomes possible to define production. A general definition of production is given first, followed by the rather more restricted definition that is used in the integrated framework of the SNA. Following this there is a discussion of the production boundary as it affects household activities and non-observed activities.

The general production boundary

7.24 Economic production may be defined as an activity carried out under the control and responsibility of an institutional unit that uses inputs of labour, capital, and goods and services to produce outputs of goods or services. There must be an institutional unit that assumes responsibility for the process of production and owns any resulting goods or knowledge-capturing products or is entitled to be paid, or otherwise compensated, for the change-effecting or margin services provided. A purely natural process without any human involvement or direction is not production in an economic sense. For example, the unmanaged growth of fish stocks in international waters is not production, whereas the activity of fish farming is production.

7.25 While production processes that produce goods can be identified without difficulty, it is not always so easy to distinguish the production of services from other activities that may be both important and beneficial. Activities that are not productive in an economic sense include basic human activities such as eating, drinking, sleeping, taking exercise, etc.; it is impossible for one person to employ another person to perform instead. Paying someone else to take exercise is no way to keep fit. On the other hand, activities such as washing, preparing meals, caring for children, the sick or aged are all activities that can be provided by other units and, therefore, fall within the general production boundary. Many households employ paid domestic staff to carry out these activities for them.

The production boundary in the integrated framework of the SNA

7.26 The production boundary in the integrated framework of national accounts is more restricted than the general production boundary. For reasons explained below, activities undertaken by households that produce services for their own use are excluded from the concept of production in the integrated framework, except for services provided by owner-occupied dwellings and services produced by employing paid domestic staff. Otherwise, the production boundary in the integrated framework is the same as the more general one defined in the previous paragraphs.

7.27 The production boundary of the integrated framework of national accounts includes the following activities:

- The production of all goods or services that are supplied to units other than their producers, or intended to be so supplied, including the production of goods or services used up in the process of producing such goods or services;
- The own-account production of all goods that are retained by their producers for their own final consumption or gross capital formation, including the production of electricity through the use of solar panels and wind power plants and the production of heat through geothermal heat or heat pumps;
- The own-account production of knowledge-capturing products that are retained by their producers for their own final consumption or gross capital formation but excluding (by convention) such products produced by households for their own use;
- The own-account production of housing services by owner occupiers; and
- The production of domestic and personal services by employing paid domestic staff.

The production boundary within households

The exclusion of most services produced for own use by households

7.28 The production of services by members of the household for their own final consumption has traditionally been excluded from measured production in the integrated framework of national accounts and it is worth explaining briefly why this is so. It is useful to begin by listing those services for which no entries are recorded in the integrated framework when they are produced by household members and consumed within the same household:

- The cleaning, decoration and maintenance of the dwelling occupied by the household, including small repairs of a kind usually carried out by tenants as well as owners;
- The cleaning, servicing and repair of household durables or other goods, including vehicles used for household purposes;
- The preparation and serving of meals;
- The care, training and instruction of children;
- The care of sick, infirm or old people;
- The transportation of members of the household or their goods.

7.29 In most countries a considerable amount of labour is devoted to the production of these services, and their consumption makes an important contribution to material well-being. However, national accounts serve a variety

of analytical and policy purposes and are not compiled simply, or even primarily, to produce indicators of (material) well-being. The reasons for not imputing values for unpaid domestic or personal services produced and consumed within households may be summarized as follows:

- The own-account production of services within households is a self-contained activity with limited repercussions on the rest of the economy. The decision to produce a household service entails a simultaneous decision to consume that service. This is not true for goods. For example, if a household engages in the production of agricultural goods, it does not follow that it intends to consume them all. Once the crop has been harvested, the producer has a choice about how much to consume, how much to store for future consumption or production and how much to offer for sale or barter on the market. Similarly, part of the electricity produced through solar panels on the roof of a dwelling may be delivered to the grid, in exchange for a compensation in cash or a compensation in kind. The latter may consist of a compensation in the form of free electricity in periods that the own production of electricity is not sufficient to cover the own demand. Indeed, although it is customary to refer to the own-account production of goods, it is not possible to determine at the time the production takes place how much of it will eventually be consumed by the producer. For example, if an agricultural crop turns out to be better than expected, the household may dispose of some of it on the market even though it may have originally supposed it would consume it all. This kind of possibility is non-existent for services; it is not possible to produce a service and then decide whether to offer it for sale or not.
- As the vast majority of household services are not produced for the market, suitable exchange prices that can be used to value such services may not be directly available. It is therefore relatively difficult to estimate values not only for the outputs of the services but also for the associated incomes and expenditures that can be meaningfully added to the values of the monetary transactions on which most of the entries in the accounts are based.
- With the exception of the imputed rental of owner-occupied dwellings, the decision to produce services for own consumption is not influenced by and does not influence economic policy because the imputed values are not equivalent to monetary flows. Changes in the levels of household services produced do not affect the tax yield of the economy or the level of the exchange rate, to give two examples.

7.30 Thus, the reluctance of national accountants to impute values for the outputs, incomes and expenditures associated with the production and consumption of services within households is explained by a combination of factors, namely the relative isolation and independence of these activities from markets, the difficulty of making economically meaningful estimates of their values, and the adverse effects it would have on the usefulness of the accounts for policy purposes and the analysis of markets and market disequilibria.

7.31 Having said that, for the purpose of providing an improved measure of material well-being, countries are encouraged to compile extended accounts, in which the production (and asset) boundary is extended by also including measures of unpaid household service work. See chapter 34 on Measuring well-being for more detailed information.

7.32 The exclusion of household services from the production boundary in the integrated framework of national accounts has consequences for labour statistics. According to International Labour Organization (ILO) guidelines, the labour force is restricted to those persons who are actively prepared to make their labour available during any part of the reference period for producing goods and services in return for pay or profit. Accordingly, the economically active population relates to those persons who are actually providing labour for pay or profit, in practice being the sum of the employed population and the unemployed population. In the integrated framework of the SNA, the concept of labour input is somewhat broader than the ICLS concept of employment, as the SNA concept also includes labour which is used as an input into the household production of goods for own final use, some types of volunteer work as well as unpaid trainee work. Whatever the case, if the production boundary were to be extended to include (the labour input for) the production of own-account unpaid household services, virtually the whole adult population would be economically active and unemployment, in SNA terms, eliminated. In practice, it would be necessary to revert to the existing boundary of production in the integrated framework, or the boundaries and definitions from the ICLS standards, if only to obtain meaningful employment statistics.

Own-account production of goods

7.33 Although services produced for own consumption within households fall outside the boundary of production used in the integrated framework of the SNA, it is nevertheless useful to give further guidance with respect to the treatment of certain kinds of household activities which may be particularly important in some developing countries. The integrated framework of the SNA includes the production of all goods within the production boundary. The following types of production by households are included whether intended for own final consumption or not:

- The production of agricultural products and their subsequent storage; the gathering of berries or other non-cultivated crops; forestry; wood-cutting and the collection of firewood; hunting and fishing;
- The production of other primary products such as mining salt, cutting peat, etc.;
- The processing of agricultural products; the production of grain by threshing; the production of flour by milling; the curing of skins and the production of leather; the production and preservation of meat and fish products; the preservation of fruit by drying, bottling, etc.; the production of dairy products such as butter or cheese; the production of beer, wine, or spirits; the production of baskets or mats; etc.;
- Other kinds of processing such as weaving cloth; dress making and tailoring; the production of footwear; the production of pottery, utensils or durables; making furniture or furnishings; etc.;
- The production of electricity through the use of solar panels and wind power plants and the production of heat through geothermal heat or heat pumps;
- The supply of water is also considered a goods-producing activity in this context. In principle, supplying water is a similar kind of activity to extracting and piping crude oil.

7.34 It is not feasible to draw up a complete, exhaustive list of all possible productive activities but the above list covers the most common types. When the amount of a good produced within households is believed to be quantitatively important in relation to the total supply of that good in a country, its production should be recorded. Otherwise, it may not be worthwhile trying to estimate it in practice.

Services of owner-occupied dwellings

7.35 The production of housing services for their own final consumption by owner occupiers has always been included within the production boundary in the integrated framework of national accounts, although it constitutes an exception to the general exclusion of own-account service production. The ratio of owner-occupied to rented dwellings can vary significantly between countries, between regions of a country and even over short periods of time within a single country or region, so that both international and inter-temporal comparisons of the production and consumption of housing services could be distorted if no imputation were made for the value of own-account housing services. The imputed value of the income generated by such production is taxed in some countries.

Production of domestic and personal services by employing paid domestic staff

7.36 Although paid domestic staff produce many of the services excluded from the production boundary of the integrated framework of the SNA when undertaken by household members, paying a person who comes to the house to wash, cook or look after children, for example, is as much a market activity as taking clothes to a laundry, eating at a restaurant or paying a nursery to care for children. By convention, though, only the wages of the domestic staff are treated as the value of output. Other materials used in their work are treated as household consumption expenditure because of the difficulty of identifying what is used by the staff and what by household members. Nor are payments to other household members treated as payments for services even if the payments are nominally for the performance of chores, for example pocket-money paid to children.

"Do-it-yourself" decoration, maintenance and small repairs

7.37 "Do-it-yourself" repairs and maintenance to consumer durables and dwellings carried out by members of the

household constitute the own-account production of services and are excluded from the production boundary of the integrated framework of the SNA. The materials purchased are treated as final consumption expenditure.

7.38 In the case of dwellings, "do-it-yourself" activities cover decoration, maintenance and small repairs, including repairs to fittings, of types that are commonly carried out by tenants as well as by owners. On the other hand, more substantial repairs, such as replastering walls or repairing roofs, carried out by owners, are essentially intermediate inputs into the production of housing services. However, the production of such repairs by an owner-occupier is only a secondary activity of the owner in his capacity as a producer of housing services. The production accounts for the two activities may be consolidated so that, in practice, the purchases of materials for repairs become intermediate expenditures incurred in the production of housing services. Major renovations or extensions to dwellings are fixed capital formation and recorded separately.

The use of consumption goods

7.39 The use of goods within the household for the direct satisfaction of human needs or wants is not treated as production. This applies not only to materials or equipment purchased for use in leisure or recreational activities but also to foodstuffs purchased for the preparation of meals. The preparation of a meal is a service activity and is treated as such in the integrated framework of the SNA and *ISIC*. It therefore falls outside the production boundary of the integrated framework when the meal is prepared for own consumption within the household. The use of a durable good, such as a vehicle, by persons or households for their own personal benefit or satisfaction is intrinsically a consumption activity and should not be treated as if it were an extension, or continuation, of production. However, when vehicles, or other types of assets, are used in the production of goods and services (e.g., the dual use of motor vehicles for paid taxi services to third parties, or the dual use of equipment in an unincorporated enterprise more generally), the expenditure on the purchase of the durable should be split between gross fixed capital formation by the enterprise and household final consumption expenditure in proportion to its usage for business and personal purposes.

The production and use of "free" products

7.40 Subsidizing certain prices, often down to zero, is a common technique for increasing sales of complementary items at marked-up prices. For example, a telecom carrier may offer subsidized smartphones, or a manufacturer of ink cartridges and printers may subsidize the printers. Other examples are free online games that encourage in-game purchases and free software that encourages users to purchase support services and related software products. Subsidized items and the marked-up items that they help sell can be treated as an implicit bundle. They do not cause any of the producer's output to be missed as long as the revenue from the entire bundle is taken into account. Subsidized outputs of this type are used by the same group of users who purchase the marked-up outputs. Users themselves therefore fund the subsidies that they receive, and their expenditures on the bundle of outputs include the full value of the cross-subsidized components of the bundle.

7.41 However, even though the standard procedures for measuring output capture the full value of the "free" and subsidized items supplied by market producers, the recording of the output may be lagged if the marked-up item that funds the subsidy is sold in a later period than the cross-subsidized item. Certainly, for an individual consumer, the consumption of the "free" or subsidized output often comes first, and the wait until the purchase of the marked-up item may be significant. However, for consumers in the aggregate, a balanced mix of the supplier's cross-subsidized and marked-up products will be used in the steady state. Only during periods of rapid growth will the producer's output be understated. But during periods of falling demand, when the producer's output will be overstated, for a broad aggregate such as GDP the net effect of such timing problems should be negligible.

7.42 Another issue which could potentially cause GDP to be underestimated is that prices of investment goods such as software and equipment are often cross-subsidized by marked-up supplies and services that the investment good helps sell. When this occurs, fixed capital formation and the value added of the users of the bundle of outputs will be understated, and their intermediate consumption of supplies and services will be overstated. Research on the extent of this problem and the feasibility of re-allocating the subsidies to the price of the investment good may be useful.

7.43 For (digital) platforms, "free" and subsidized outputs are not merely common, they are the rule. Two-sided platforms typically have a subsidized side, which is often free, and a funder side. Platform users differ in their willingness-to-pay for opportunities to connect with those on the other side and in the willingness-to-pay of those on the other side to connect with them. The platform responds to these differences by subsidizing the users whose presence on the platform will raise the value of the platform to those with a high willingness-to-pay, while marking up the prices paid by those in the latter group. For example, manufacturers of consumer products often have a high willingness-to-pay to inform potential customers, via advertising, about the benefits of their products as a way of increasing sales. Platforms thus assemble the necessary audience by supplying "free" services, and then recover the cost of supplying the free services by way of advertising revenues. The purchasers of advertising services, in turn, recover the cost of the platform's services through mark-ups on the advertised products.

7.44 However, different from the case of the first type of cross-subsidized items, the platform's funders recover their expenses from those on the other side as part of the transactions facilitated by the platform (e.g., sales of the advertised products). Thus, the consumers of the "free" platform services ultimately fund those services. Even if the set of individuals who pay the mark-ups and the set of individuals who consume the "free" services overlap only partially, households are collectively the funders of the "free" platform services used by households.

7.45 A third type of "free" services relates to the creation of content such as videos, images, text, and audio, both as a leisure activity and for commercial purposes such as receiving advertising revenue. Creating content for leisure purposes is outside the production boundary of the integrated framework of national accounts. If the content creator does not receive remuneration, the content is assumed to be created for leisure purposes. The creation of open-source software also falls under this category. The value of open-source software produced by programmers employed by corporations, government, or NPISHs should already be included in measures of own-account software investment as estimated by the sum of costs method. Open-source software produced for commercial purposes by an unincorporated enterprise that is classified in the households' sector is also conceptually inside the production boundary. Moreover, enterprises may, for example, be bundling the free software with software support services, which would be another case of cross-subsidization of products. However, if the open-source software is produced by individual volunteers who are not remunerated in any way for their contribution, then the production is outside the production boundary of the integrated framework of national accounts.

7.46 More information of the treatment of "free" digital products in the integrated framework of national accounts, as well as further details on the compilation of extended accounts for "free" digital products, can be found in chapter 22 on Digitalisation.

The "non-observed" economy

7.47 There is considerable interest in the phenomenon of the non-observed economy. This term is used to describe activities that, for one reason or another, are not captured in regular statistical enquiries. The reason may be that the activity is informal and thus escapes the attention of surveys geared to formal activities; it may be that the producer is anxious to conceal a legal activity, or it may be that the activity is illegal. Chapter 39 on Informal economy discusses measurement of the informal economy within households.

7.48 Certain activities may clearly fall within the production boundary of the integrated framework of the SNA and also be quite legal (provided certain standards or regulations are complied with) but deliberately concealed from public authorities for the following kinds of reasons:

- To avoid the payment of income, value added or other taxes;
- To avoid the payment of social security contributions;
- To avoid having to meet certain legal standards such as minimum wages, maximum hours, safety or health standards, etc.;
- To avoid complying with certain administrative procedures, such as completing statistical questionnaires or other administrative forms.

7.49 Because certain kinds of producers try to conceal their activities from public authorities, it does not follow that they are not included in national accounts in practice. Many countries have had considerable success in compiling estimates of production that cover the non-observed economy as well as the ordinary economy. In some industries,

such as agriculture or construction, it may be possible by using various kinds of surveys and the commodity flow method to make satisfactory estimates of the total output of the industry without being able to identify or measure that part of it that is not observed. Because the non-observed economy may account for a significant part of the total economy of some countries, it is particularly important to try to make estimates of total production that include it, even if it cannot always be separately identified as such.

7.50 There may be no clear borderline between the non-observed economy and illegal production. For example, production that does not comply with certain safety, health or other standards could be described as illegal. Similarly, the evasion of taxes is itself usually a criminal offence. However, it is not necessary for the purposes of the SNA to try to fix the precise borderline between non-observed and illegal production as both are included within the production boundary in any case. It follows that transactions on unofficial markets that exist in parallel with official markets (for example, for foreign exchange or goods subject to official price controls) must also be included in the accounts, whether or not such markets are actually legal or illegal.

7.51 There are two kinds of illegal production:

- The production of goods or services whose sale, distribution or possession is forbidden by law;
- Production activities that are usually legal but become illegal when carried out by unauthorized producers; for example, unlicensed medical practitioners.

7.52 Examples of activities that may be illegal but productive in an economic sense include the manufacture and distribution of narcotics, illegal transportation in the form of smuggling of goods and of people, and services such as prostitution.

7.53 Both kinds of illegal production are included within the production boundary of the integrated framework of the SNA provided they are genuine production processes whose outputs consist of goods or services for which there is an effective market demand. The units that purchase smuggled goods, for example, may not be involved in any kind of illegal activities and may not even be aware that the other party to the transaction is behaving illegally. Transactions in which illegal goods or services are bought and sold need to be recorded not simply to obtain comprehensive measures of production and consumption but also to prevent statistical discrepancies appearing elsewhere in the accounts. The incomes generated by illegal production may be disposed of quite legally, while conversely, expenditures on illegal goods and services may be made out of funds obtained quite legally. The failure to record illegal transactions may lead to significant statistical discrepancies within the accounts if the consequences of the activity are recorded in the financial account and the external accounts, say, but not in the production and income accounts.

7.54 Regular thefts of products from inventories are not included in the value of output. Suppose a shop suffers regular theft from inventories. In calculating the value of output of the shop, part of the margin on the goods sold must cover the cost of the goods stolen. Thus the margin is calculated as the value received for the goods sold less the cost of both the goods sold and the goods stolen. If the stolen products are sold elsewhere, for example on a street stall, the value of the output of the street trader is still calculated as the difference between the value received for the goods and the value paid for them. In this case, though, if nothing is paid for the goods, the whole of the sales value appears as the margin.

7.55 Illegal production does not refer to the generation of externalities such as the discharge of pollutants. Externalities may result from production processes that are themselves quite legal. Externalities are created without the consent of the units affected and no values are imputed for them in the integrated framework of the SNA.

7.56 Although non-observed and illegal activities require special consideration, it is not necessarily the case that they are excluded from normal data collection processes.

C. Basic, producers' and purchasers' prices

7.57 More than one set of prices may be used to value outputs and inputs depending upon how taxes and subsidies on products, and also transport charges, are recorded. Moreover, value added taxes (VAT), and similar deductible taxes may also be recorded in more than one way. The methods of valuation used in the integrated framework of the SNA are explained in this section.

7.58 The detailed discussion of taxes related to production appears in section C of chapter 8 on Earned income

accounts, but it is important in the context of discussing alternative price measures to make the distinction between taxes (and subsidies) on products and other taxes (and subsidies) on production. As the name implies, taxes on products are payable per unit of the product. The tax may be a flat amount dependent on the physical quantity of the product or may be a percentage of the value at which the product is sold. Other taxes on production are taxes imposed on the producer that do not apply to products nor are levied on the profits of the producer. Examples include taxes on land or premises used in production or on the labour force employed. The distinction between subsidies on products and other subsidies on production is made on similar grounds.

1. Basic and producers' prices

7.59 The SNA utilizes two kinds of prices to measure output, namely, basic prices and producers' prices:

- ***The basic price is the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any tax payable, and plus any subsidy receivable, by the producer as a consequence of its production or sale. It excludes any transport charges invoiced separately by the producer.***
- ***The producer's price is the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any VAT, or similar deductible tax, invoiced to the purchaser. It excludes any transport charges invoiced separately by the producer.***

Neither the producer's nor the basic price includes any amounts receivable in respect of VAT, or similar deductible tax, invoiced on the output sold.

7.60 Unlike the basic price, the producer's price includes taxes on products (taxes payable per unit of output) and excludes subsidies on products (subsidies receivable per unit of output). The producer's price is the price, excluding VAT, that the producer invoices to the purchaser. The basic price measures the amount retained by the producer and is, therefore, the price most relevant for the producer's decision-taking. It is becoming increasingly common in many countries for producers to itemize taxes separately on their invoices so that purchasers are informed about how much they are paying to the producer and how much as taxes to the government.

7.61 Basic prices exclude any taxes on products the producer receives from the purchaser and passes on to government but include any subsidies the producer receives from government and uses to lower the prices charged to purchasers.

7.62 Both producers' and basic prices are actual transaction prices that can be directly observed and recorded. Basic prices are often reported in statistical inquiries and some official "producer price" indices actually refer to basic prices rather than to producers' prices as defined here.

VAT and similar deductible taxes

7.63 Many countries have adopted some form of VAT. VAT is a wide-ranging tax usually designed to cover most or all goods and services. In some countries, VAT may replace most other forms of taxes on products, but VAT may also be levied in addition to some other taxes on products, such as excise duties on tobacco, alcoholic drink or fuel oils.

7.64 VAT is a tax on products collected in stages by enterprises. Producers are required to charge certain percentage rates of VAT on the goods or services they sell. The VAT is shown separately on the sellers' invoices so that purchasers know the amounts they have paid. However, producers are not required to pay to the government the full amounts of the VAT invoiced to their customers because they are usually permitted to deduct the VAT that they themselves have paid on goods and services purchased for their own intermediate consumption, resale or gross fixed capital formation. Producers are obliged to pay only the difference between the VAT on their sales and the VAT on their purchases for intermediate consumption or capital formation, hence the expression value added tax. The percentage rate of VAT is liable to vary between different categories of goods and services and also according to the type of purchaser. For example, sometimes goods purchased by visiting non-residents, which count as exports, may be exempt from VAT.

7.65 Other tax regimes exist, not called VAT, that operate in a similar manner. Within the SNA, the term VAT is used

to apply to any similar deductible tax scheme even if the scope is narrower than a full system of VAT.

7.66 The following terminology needs to be defined:

- ***Invoiced VAT is the VAT payable on the sales of a producer, shown separately on the invoice that the producer presents to the purchaser.***
- ***Deductible VAT is the VAT payable on purchases of goods or services intended for intermediate consumption, gross fixed capital formation or for resale that a producer is permitted to deduct from his own VAT liability to the government in respect of VAT invoiced to his customers.***
- ***Non-deductible VAT is VAT payable by a purchaser that is not deductible from his own VAT liability, if any.***

Thus, a market producer is able to recover the costs of any deductible VAT payable on his own purchases by reducing the amount of his own VAT liability in respect of the VAT invoiced to his own customers. On the other hand, the VAT paid by households for purposes of final consumption or fixed capital formation in dwellings is not deductible. The VAT payable by non-market producers owned by government units or NPISHs may also not be deductible.

Gross and net recording of VAT

7.67 There are two alternative systems that may be used to record VAT, the "gross" or "net" systems. Under the gross system, all transactions are recorded including the amounts of any invoiced VAT. Thus, the purchaser and the seller record the same price, irrespective of whether or not the purchaser is able to deduct the VAT subsequently.

7.68 While the gross system of recording seems to accord with the traditional notion of recording at "market" prices, it presents some difficulties. Practical experience with the operation of VAT over many years in a number of countries has shown it may be difficult, if not impossible, to utilize the gross system because of the way business accounts are computed and records are kept. Sales are normally reported excluding invoiced VAT in most industrial inquiries and business surveys. Conversely, purchases of goods and services by producers are usually recorded excluding deductible VAT. Although the gross system has been tried in some countries, it has had to be abandoned for these reasons. Further, it can be argued that the gross system distorts economic reality to the extent that it does not reflect the amounts of VAT actually paid by businesses. Large amounts of invoiced VAT are deductible and thus represent only notional or putative tax liabilities.

7.69 The integrated framework of the SNA therefore requires that the net system of recording VAT should be followed. In the net system:

- Outputs of goods and services are valued excluding invoiced VAT; imports are similarly valued excluding invoiced VAT;
- Purchases of goods and services are recorded including non-deductible VAT.

Under the net system, VAT is recorded as being payable by purchasers, not sellers, and then only by those purchasers who are not able to deduct it. Almost all VAT is therefore recorded in the integrated framework as being paid on final uses, mainly on household consumption. However, small amounts of VAT may be paid by businesses in respect of certain kinds of purchases on which VAT may not be deductible.

7.70 The disadvantage of the net system is that different prices must be recorded for the two parties to the same transaction when the VAT is not deductible. The price recorded for the producer does not include invoiced VAT whereas the price recorded for the purchaser does include the invoiced VAT to the extent that it is not deductible. Thus, in aggregate, the total value of the expenditures recorded for purchasers must exceed the total value of the corresponding sales receipts recorded for producers by the total amount raised as non-deductible VAT.

7.71 The producer's price thus defined is a hybrid that excludes some, but not all, taxes on products. The basic price, which does not include any taxes on the product (but includes subsidies on the product) becomes a clearer concept in these circumstances and is the preferred method for valuing the output of producers.

2. Purchasers' prices

7.72 ***The purchaser's price is the amount paid by the purchaser, excluding any deductible VAT or similar deductible tax, in order to take delivery of a unit of a good or service at the time and place required by the purchaser. This price will include any transport charges paid separately by the purchaser to take delivery at the required time and place.***

7.73 When a purchaser buys directly from the producer, the purchaser's price may exceed the producer's price by:

- The value of any non-deductible VAT, payable by the purchaser; and
- The value of any transport charges on a good paid separately by the purchaser and not included in the producer's price.

It follows that the purchaser's price may exceed the basic price by the amount of the two items just listed plus the value of any taxes less subsidies on the product (other than VAT).

7.74 If purchasers buy output not from the producer directly but from a wholesaler or retailer, it is necessary to include their margins in the difference between basic and purchasers' prices also.

7.75 For certain purposes, including input-output analysis, it may be convenient to consider that the purchase of a product consists of two separate transactions. The first of these is the purchase of the product from the producer and the second is the margin paid to the wholesaler or retailer of the product. The margin represents the difference between the price paid by the final purchaser of a product after it has passed through the wholesale and retail distribution chains and the producer's price received by its original producer.

7.76 The traditional concept of the "market price" becomes somewhat blurred under a system of VAT or similar deductible taxes because there may be two different prices for a single transaction: one from the seller's point of view and another from the purchaser's, depending upon whether or not the tax is deductible. It is recommended that the term "market prices" should be avoided when referring to value added and the price basis used (basic, producers' or purchasers' prices) be specified to avoid ambiguity.

3. Basic, producers' and purchasers' prices – a summary

7.77 Figure 7.1 gives an overview of the essential differences between basic, producers' and purchasers' prices.

Figure 7.1: Basic, producers' and purchasers' prices

Basic prices
+
Taxes on products excluding invoiced VAT
-
Subsidies on products
=
Producers' prices
+
VAT not deductible by the purchaser
+
Separately invoiced transport charges
+
Wholesalers' and retailers' margins
=
Purchasers' prices

D. Value added and GDP

1. Gross and net value added

7.78 The balancing item of a current account is the excess of revenues over expenditures. The rationale for dividing transactions into sets of accounts is that the balancing item of each account is of economic interest. The balancing item of the production account is value added, so called because it measures the value created by production. Because a production account may be compiled for an institutional unit or sector, or establishment or industry, value added may be derived for any of these. Value added is of analytical interest because when the value of taxes on products (less subsidies on products) is added, the sum of value added for all resident units gives the value of gross domestic product (GDP).

7.79 Value added represents the contribution of labour and capital to the production process. Once the amount of value added appropriated by government in the form of other taxes on production is deducted from value added and the value of other subsidies on production is added, the compensation of labour and capital is revealed. However, capital in the form of fixed capital and most natural resources has a finite life length. Some part of value added should therefore be regarded as the reduction in value of capital due to its use in production. These allowances are called depreciation and depletion.

7.80 Depreciation and depletion are important elements in the integrated framework of the SNA. In most cases, when a distinction is drawn between "gross" and "net" recording, "gross" means without deducting depreciation and depletion, while recording "net" means after deducting depreciation and depletion. In particular, all the major balancing items in the accounts from value added through to saving may be recorded gross or net, that is, before or after deducting depreciation and depletion. It should also be noted that depreciation and depletion are typically quite large compared with most of the net balancing items.

7.81 Depreciation and depletion are among the most difficult items in the accounts to define conceptually and to estimate in practice. Further, depreciation and depletion do not represent the aggregate values of a set of transactions. They are imputed values whose economic significance is different from entries in the accounts based mainly on market transactions. For these reasons, the major balancing items in the integrated framework of national accounts have always tended to be recorded both gross and net of depreciation and depletion. This tradition is continued in the SNA where provision is made for balancing items from value added through to saving to be recorded both ways. In general, the gross figure is the easier to estimate and so may be more reliable, but the net figure is the one that is conceptually more appropriate and relevant for analytical purposes. As net measures are superior from a conceptual point of view, more emphasis should be placed on these measures in communication, complementing but not necessarily replacing gross measures which are traditionally used. See also chapter 2 on National accounts and its contribution to measuring well-being and sustainability and chapter 21 on Communicating and disseminating macroeconomic statistics).

7.82 More generally, the following aggregates can be distinguished:

- "Gross value added" is defined as the value of output minus the value of intermediate consumption;
- "Value added net of depreciation" is defined as the value of output minus the value of both intermediate consumption and depreciation;
- "Net value added" is defined as the value of output minus the values of intermediate consumption, depreciation and depletion.

To avoid repetition, only gross value added will be cited in the following sections when the corresponding conclusions for net value added are obvious.

2. Alternative measures of value added

7.83 In the SNA, intermediate inputs are valued and recorded at the time they enter the production process, while outputs are recorded and valued as they emerge from the process. Intermediate inputs are normally valued at purchasers' prices and outputs at basic prices, or alternatively at producers' prices if basic prices are not available. The difference between the value of the intermediate inputs and the value of the outputs is gross value added against which must be charged depreciation and depletion, taxes on production (less subsidies) and remuneration

of employees. The positive or negative balance remaining is the net operating surplus or mixed income.

7.84 As indicated above, alternative measures of gross value added may be obtained by associating different sets of prices with a set of quantities of inputs and outputs. The various measures that may be derived using the different sets of prices recognized in the SNA are considered below.

Gross value added at basic prices

7.85 ***Gross value added (B1g) at basic prices is defined as the valuation of gross value added during an accounting period, which reflects the price of products receivable by the producer exclusive of taxes payable on products and inclusive of subsidies receivable on products, less intermediate consumption valued at purchasers' prices.*** Although the outputs and inputs are valued using different sets of prices, for brevity the value added is described by the prices used to value the outputs. From the point of view of the producer, purchasers' prices for inputs and basic prices for outputs represent the prices actually paid and received. Their use leads to a measure of gross value added that is particularly relevant for the producer.

Gross value added at producers' prices

7.86 ***Gross value added (B1g) at producers' prices is defined as the valuation of gross value added during an accounting period, which reflects the price of products receivable by the producer inclusive of taxes on products except deductible value added tax and exclusive of subsidies on products, less intermediate consumption valued at purchasers' prices.*** As already explained, in the absence of VAT, the total value of the intermediate inputs consumed is the same whether they are valued at producers' or at purchasers' prices, in which case this measure of gross value added is the same as one that uses producers' prices to value both inputs and outputs. It is an economically meaningful measure that is equivalent to the traditional measure of gross value added at market prices. However, in the presence of VAT, the producer's price excludes invoiced VAT, and it would be inappropriate to describe this measure as being at "market prices".

7.87 Both this measure of gross value added and that described in the previous subsection use purchasers' prices to value intermediate inputs. The difference between the two measures is entirely attributable to their differing treatments of taxes, less subsidies, on products payable on outputs (other than invoiced VAT). By definition, the value of output at producers' prices exceeds that at basic prices by the amount, if any, of the taxes, less subsidies, on products, so that the two associated measures of gross value added must differ by the same amount.

Gross value added at factor cost

7.88 Gross value added at factor cost is not a concept used explicitly in the SNA. Nevertheless, it can easily be derived from either of the measures of gross value added presented above by subtracting the value of any taxes, less subsidies, on production, payable out of gross value added as defined. For example, the only taxes (or subsidies) on production remaining to be paid out of gross value added at basic prices consist of "other taxes (or subsidies) on production". These consist mostly of current taxes (or subsidies) on the labour or capital employed in the enterprise, such as payroll taxes or current taxes on vehicles or buildings. Gross value added at factor cost can thus be derived from gross value added at basic prices by subtracting other taxes on production, and adding other subsidies on production.

7.89 The conceptual difficulty with gross value added at factor cost is that there is no observable set of prices such that gross value added at factor cost is obtained directly by multiplying this set of prices by the sets of quantities of outputs. By definition, other taxes or subsidies on production are not taxes or subsidies on products that can be eliminated from the input and output prices. Thus, despite its traditional name, gross value added at factor cost is not strictly a measure of value added; it is essentially a measure of income and not output. It represents the amount remaining for distribution out of gross value added, however defined, after the payment of all taxes on production and the receipt of all subsidies on production. It makes no difference which measure of gross value added is used to derive this income measure because the alternative measures of value added considered above differ only in respect of the amounts of the taxes or subsidies on production that remain payable out of gross value added.

3. Gross domestic product (GDP)

7.90 The underlying rationale behind the concept of gross domestic product (GDP) for the economy as a whole is that it should measure the total gross value added from all institutional units resident in the economy. However, while the concept of GDP is based on this principle, GDP as defined in the integrated framework of the SNA is such that an identity exists between a measure built on value added, a measure built on income and one based on final expenditures. To achieve this, it is important that the same contribution to GDP is made by taxes, less subsidies, on production under all three measures. The expenditure measure of GDP includes all taxes, less subsidies, on production and taxes, less subsidies, on imports since ultimately these are included in the purchasers' prices of the final users.

7.91 Given this definition of GDP, the following identities hold when the summations are taken over all resident producers:

a. GDP = the sum of the gross value added at producers' prices

   plus taxes on imports

   minus subsidies on imports

   plus non-deductible VAT.

b. GDP = the sum of the gross value added at basic prices

   plus all taxes on products,

   minus all subsidies on products.

c. GDP = the sum of the gross value added at factor cost

   plus all taxes on products,

   minus all subsidies on products,

   plus all other taxes on production,

   minus all other subsidies on production.

In cases b and c, the items taxes on products and subsidies on products includes taxes and subsidies on imports as well as on outputs.

4. Domestic production

7.92 GDP measures the production of all resident producers. This does not necessarily coincide with all production taking place within the geographical boundary of the economic territory. Some of the production of a resident producer may take place abroad, while some of the production taking place within the geographical boundary of the economy may be carried out by non-resident producer units. For example, a resident producer may have teams of employees working abroad temporarily on the installation, repair or servicing of equipment. This output is an export of a resident producer and the productive activity does not contribute to the GDP of the country in which it takes places. Thus, the distinction between resident and non-resident institutional units is crucial to the definition and coverage of GDP. In practice most of the productive activity of resident producers takes place within the country in which they are resident. However, producers in service industries that typically have to deliver their outputs directly to their clients wherever they are located are increasingly tending to engage in production in more than one country, a practice that is encouraged by rapid transportation and instantaneous communication facilities. Geographical boundaries between adjacent countries are becoming less significant for mobile service producers, especially in small countries bordered by several other countries.

E. The measurement of output

1. Production versus output

7.93 Production is an activity carried out by an establishment. It may not always be clear whether an establishment is producing a good or is providing a service. For example, an oil refinery processing crude oil that it owns is producing a good (refined petroleum); if the same refinery processes crude oil belonging to another unit, then it is providing a refinery service to that unit. This lack of clarity may often appear for goods passing between establishments of the same enterprise and it is important to know when to record the output of a good and when of a change-effecting service. When the establishments belong to different enterprises (that is to different institutional units), the defining principle is that of economic ownership. If an establishment has no discretion about the level of production, the price to be charged for the good or the destination of the good, there is evidence that the establishment has not taken economic ownership of the goods being processed and the value of the output should be treated as the processing element only. This is the case for the refinery service cited above.

7.94 When the establishments involved belong to the same enterprise, there is no change of ownership since both establishments have the same owner. However, the principle of transferring risk, which accompanies change of ownership, can still be applied. Suppose, for example, that an establishment receives coal from another establishment in the same enterprise, uses it to generate electricity and then sells the electricity on the open market. The electricity generator has discretion about the amount of coal it demands, the amount of electricity to be generated and the prices to be charged. In such a case, the value of electricity generated should be measured including the cost of the coal consumed in the process even though there is no legal change in ownership given that both establishments belong to the same enterprise.

7.95 The measurement of output (and related inputs), including the determination of (changes in) economic ownership, may be complicated by the way in which global production arrangements are established. More details on the recording of such arrangements can be found in chapter 23 on Globalisation.

7.96 In general, all goods and services that are produced and used by the same establishment are excluded from the measure of output. However, there are exceptions here also. For example, output is recorded if the goods and services being produced are used for capital formation of the establishment. Similarly output is recorded for products entering inventories even if eventually they are withdrawn from inventories for use as intermediate consumption in the same establishment in a later period. If the establishment is a household unincorporated enterprise growing maize, the value of maize produced includes maize kept for household consumption.

7.97 An establishment may produce goods and services that are used as its own intermediate consumption. An example is unglazed china that is only delivered to other units after glazing. In general the unglazed china is not recorded as output but if there is some china remaining unglazed at the end of the production period, it should be recorded as being produced and entering inventories. In the subsequent period, the unglazed china is withdrawn from inventories and the act of glazing constitutes output in the second period.

7.98 Although production is related to activities and thus the output of one production process is one set of products, output is measured for an establishment and may include the output of several production processes. Thus ***output (P1) is defined as the goods and services produced by an establishment,***

- ***a. excluding the value of any goods and services used in an activity for which the establishment does not assume the risk of using the products in production, and***
- ***b. excluding the value of goods and services consumed by the same establishment except for goods and services used for capital formation (fixed capital or changes in inventories) or own final consumption.***

2. Time of recording

7.99 The output of most goods or services is usually recorded when their production is completed. However, when it takes a long time to produce a unit of output, it becomes necessary to recognize that output is being produced continuously and to record it as "work-in-progress". For example, the production of certain agricultural goods or large durable goods such as ships or buildings may take months or years to complete. In such cases, it would distort economic reality to treat the output as if it were all produced at the moment of time when the process of production happens to terminate. Whenever a process of production extends over two or more accounting periods,

it is necessary to calculate the work-in-progress completed within each of the periods in order to be able to measure how much output is produced in each period.

7.100 On the other hand, goods and services may be completed in an accounting period but not delivered (sold) to a user in that period. Output is recorded when the work is completed and not when sold. There is thus a significant difference between the value of output in a period and the value of sales, the difference being accounted for by changes in inventories of finished goods and work-in-progress.

3. Valuation of output

7.101 Goods and services produced for sale on the market at economically significant prices may be valued either at basic prices or at producers' prices. The preferred method of valuation is at basic prices, especially when a system of VAT, or similar deductible tax, is in operation. Producers' prices should be used only when valuation at basic prices is not feasible.

7.102 Output produced by market producers for own final use should be valued at the average basic prices of the same goods or services sold on the market, provided they are sold in sufficient quantities to enable reliable estimates to be made of those average prices. If not, the output should be valued by the total production costs incurred, including depreciation (and depletion where relevant), plus any taxes, less subsidies, on production other than taxes, less subsidies, on products, plus a net return to capital used in production, plus rents payable on the use of (rented) non-produced non-financial assets. The concept of the net return to capital is introduced in section H and discussed more fully in chapter 17 on Capital services.

7.103 The non-market output produced by government units, the central bank and NPISHs that is supplied free, or at prices that are not economically significant, to other institutional units or the community as a whole is valued by total production costs incurred, similar to the method described in the above paragraph. The same holds for the valuation of production for own final use by non-market producers when these are estimated as the sum of costs. However, although generally a return to capital should be included in valuing non-market output, a return to capital for city parks and historical monuments, and undeveloped land, is to be excluded on pragmatic grounds.

4. Market output, output for own final use and non-market output

7.104 A fundamental distinction is drawn in the integrated framework of the SNA between market output and non-market output because of the way the output of each is valued. Market output is the normal situation in a market economy where producers make decisions about what to produce and how much to produce in response to expected levels of demand and expected costs of supply. The determining factor behind production decisions is that economically significant prices prevail. ***Economically significant prices are prices that have a significant effect on the amounts that producers are willing to supply and on the amounts purchasers wish to buy.*** These prices normally result when:

a. The producer has an incentive to adjust supply either with the goal of making a profit in the long run or, at a minimum, covering capital and other costs; and

b. Consumers have the freedom to purchase or not purchase and make the choice on the basis of the prices charged.

7.105 There is further discussion on economically significant prices in chapter 30 on General government and the public sector.

7.106 Non-market output is output undertaken by general government, the central bank and NPISHs that takes place in the absence of economically significant prices. A price is said to be not economically significant when it has little or no influence on how much the producer is prepared to supply and is expected to have only a marginal influence on the quantities demanded. It is a price that is not quantitatively significant from the point of view of either supply or demand. Such prices are likely to be charged in order to raise some revenue or achieve some reduction in the excess demand that may occur when services are provided completely free, but they are not intended to eliminate such excess demand. Once a decision has been taken on administrative, social or political grounds about the total amount of a particular non-market good or service to be supplied, its price is deliberately fixed below the equilibrium price that would clear the market. The difference between a price that is not economically

significant and a zero price is, therefore, a matter of degree. The price merely deters those units whose demands are the least pressing without greatly reducing the total level of demand.

7.107 Non-market output may be produced for two reasons:

a. It may be technically impossible to make individuals pay for collective services because their consumption cannot be monitored or controlled. The pricing mechanism cannot be used when transactions costs are too high and there is market failure. The production of such services has to be organized collectively by government units or the central bank and financed out of funds other than receipts from sales, namely taxation or other incomes;

b. Government units and NPISHs may also produce and supply goods or services to individual households for which they could charge but choose not to do so as a matter of social or economic policy. The most common examples are the provision of education or health services, free or at prices that are not economically significant, although other kinds of goods and services may also be supplied.

Market output

7.108 ***Market output (P11) consists of output intended for sale at economically significant prices***. The value of market output is determined as the sum of the following items:

a. The value of goods and services sold at economically significant prices;

b. The value of goods or services bartered in exchange for other goods, services or assets;

c. The value of goods or services used for payments in kind, including compensation in kind;

d. The value of goods or services supplied by one establishment to another belonging to the same market enterprise to be used as intermediate inputs where the risk associated with continuing the production process is transferred along with the goods;

e. The value of changes in inventories of finished goods and work-in-progress intended for one or other of the above uses;

f. The margins charged on the supply of goods and services, transport margins, margins on the acquisition and disposal of financial assets, etc.

Recording of sales

7.109 The times at which sales are to be recorded are when the receivables and payables are created: that is, when the ownership of the goods passes from the producer to the purchaser or when the services are provided to the purchaser. Goods or services are valued at the basic prices at which they are sold. If valuation at basic prices is not feasible, they may be valued at producers' prices instead. If it is necessary to value the sale of goods at producers' prices rather than basic prices, then the implicit value of margin services should also include any applicable taxes on products. For some margin services, especially those concerning financial assets, the value of the service provided may be implicit.

7.110 The values of sales are determined by the amounts receivable and payable by the producers and purchasers, suitably adjusted for distribution and transport margins. The amounts receivable and payable do not always coincide with the amounts actually received and paid. The amount payable should be shown in the production account and the difference between amounts payable and paid should be shown as other accounts payable or receivable in the financial account. Subsequent payments of these amounts outstanding are recorded as financial transactions and not as part of the production account. If payments made in advance or in arrears attract interest charges, these should be shown as separate transactions and not included in the value of sales.

7.111 Loyalty programmes sponsored by enterprises offer rewards, discounts, and other special incentives as a way to attract and retain customers. They are designed to encourage repeat business, offering people a reward (in the form of miles or points) for store/brand loyalty. Loyalty programmes have a very long history, and may relate to a variety of goods and services. Generally, any rebates or other rewards, for example in the form of free products, are to be recorded as reductions in the exchange price paid. However, alternative recordings of these loyalty

programmes are being considered in the context of the 2025 SNA Research Agenda.

Recording of barter

7.112 Barter occurs when goods and services are exchanged for other goods, services or assets. The value of goods or services bartered should be recorded when the ownership of the goods is transferred or the services are provided. The output of goods bartered is valued at the basic prices that would have been received if they had been sold.

Recording of compensation in kind or other payments in kind

7.113 Goods or services provided to employees as remuneration in kind, or used for other payments in kind, should be recorded when the legal ownership of the goods is transferred or the services are provided. They should be valued at the basic prices that would have been received if they had been sold.

Recording of intra-enterprise deliveries

7.114 Intra-enterprise deliveries are recorded only when the establishment receiving the goods assumes responsibility for making the decisions about the levels of supply and prices at which their output is delivered to the market. When incoming deliveries are recorded, they should be valued at the basic prices that would have been received if they had been sold.

Changes in inventories of finished goods

7.115 The basic principle underlying the measurement of changes in inventories of finished goods is that output should be recorded at the time it is produced and valued at the same price whether it is sold, otherwise used or entered into inventories for sale or use later. In effect, goods only enter inventories when they are not immediately used for sale or other use in the period they are produced. Similarly, goods are withdrawn from inventories when the demand for the goods exceeds the amount produced in a period. No output is recorded when goods produced previously are withdrawn from inventories and sold or otherwise used unless a storage activity as described below in section F takes place.

7.116 Inventories of finished goods therefore explain the difference between production and sales (or other use) in a single period. It follows that entries into inventories must be valued at the basic prices prevailing at the time of entry, while withdrawals must be valued at the prices at which they are then sold. This method of valuing changes in inventories, which may be described as the "perpetual inventory method" or PIM, is not always easy to implement in practice, however, and it sometimes leads to results that may be counter intuitive.

7.117 When prices are stable, the measurement of changes in inventories is relatively simple. However, when there is inflation (or deflation), significant price increases (decreases) may occur while goods are held in inventories. Holding gains (losses) accruing on goods held in inventories after they have been produced must not be included in the value of output. It follows from the valuation method used that, when prices are changing, goods entering and leaving inventories at different times are valued at different prices, even within the same accounting period (as also are goods sold at different times). This requires that, in principle, all entries to, and withdrawals from, inventories be recorded continuously as they occur, and helps explain the complexity of the perpetual inventory method. The perpetual inventory method ensures their exclusion by valuing goods withdrawn from inventories at the prices prevailing at the time they are withdrawn and not at the prices at which they are entered, or their "historic costs". This method of valuation can lead to much lower figures for both output and profits in times of inflation than those obtained by business accounting methods based on historic costs. Further discussion on the valuation of inventories appears in chapter 11 on Capital account.

7.118 It follows from the general principles outlined in the previous section that:

a. Goods entering inventories are valued at the basic prices prevailing at that time: that is, at the prices at which they could have been sold when first produced;

b. Goods withdrawn from inventories are valued at the basic prices prevailing at that time: that is, at the prices at which they can then be sold.

7.119 Goods held in inventories are subject to deterioration through the passage of time and are at risk from theft or accidental damage. Recurrent losses due to normal rates of wastage, theft and accidental damage are treated in the same way as withdrawals from inventories and thus reduce the value of output. This practice is followed even if the losses are high relative to output as long as they are recurrent. The total value of the changes in inventories of finished goods recorded within a specified accounting period is then given by:

the sum of the values of all goods entering inventories

minus the sum of the values of all goods withdrawn from inventories

minus the value of any recurrent losses of goods held in inventories.

Changes in inventories of work-in-progress

7.120 When the process of production takes a long time to complete, output must be recognized as being produced continuously as work-in-progress. As the process of production continues, intermediate inputs are continually being consumed so that it is necessary to record some corresponding output. Otherwise, recording the inputs and outputs as if they took place at different times, or even in different accounting periods would give meaningless figures for value added. Work-in-progress is essentially incomplete output that is not yet marketable: that is, output that is not sufficiently processed to be in a state in which it can easily be supplied or sold to other institutional units. It is essential to record such output whenever the process of production is not completed within a single accounting period so that work-in-progress is carried forward from one period to the next. In this case, the current value of the work-in-progress completed up to the end of one period is recorded in the closing balance sheet, which also serves as the opening balance sheet for the next period.

7.121 Work-in-progress may need to be recorded in any industry, including service industries such as the production of movies, depending upon the length of time it takes to produce a unit of output. It is particularly important in industries with long gestation periods, such as certain types of agricultural production or durable producers' goods production, where the period of production may extend over several years.

7.122 Work-in-progress is treated in the integrated framework of the SNA as one component of inventories of outputs held by producers. However, the borderline between inventories of partially completed buildings and structures and gross fixed capital formation may not always be clear. Gross fixed capital formation is undertaken by users of fixed assets, so gross fixed capital formation cannot be recorded until the legal ownership of the assets is transferred from their producers to their users. This transfer does not usually occur until the process of production is completed. However, when a contract of sale has been concluded in advance, the transfer of legal ownership may be deemed to occur in stages as value is put in place. In such cases, stage payments made by the purchaser can often be used to approximate the value of the transfer of partially completed assets, although stage payments may sometimes be made in advance or in arrears of the completion of the stage, in which case short-term credits are also extended from the purchaser to the producer, or vice versa. Although the partially completed asset has been transferred, it should remain to be recorded as work-in-progress, albeit in the accounts of the purchaser. In the absence of a contract of sale, the output produced must be treated as additions to the producer's inventories, that is, as work-in-progress, however large the partially completed structure may be. When the production process is terminated, the whole of the work-in-progress accumulated up to that point is effectively transformed into inventories of finished product ready for delivery or sale. When a sale takes place, the value of the sale must be cancelled by a withdrawal from inventories of equal value so that only the additions to work-in-progress recorded while production was taking place in the period in question remain as measures of output. In this way, the output is distributed over the entire period of production.

7.123 Additions to, and withdrawals from, work-in-progress are treated in the accounts in the same way as entries to, and withdrawals from, inventories of finished goods. They must be recorded at the times they take place and at the basic prices prevailing at those times. However, further explanation is needed of the valuation in view of the special characteristics of work-in-progress. This explanation appears in chapter 17 on Capital services.

Output for own final use

7.124 ***Output for own final use (P12) consists of products produced that are retained by the producer for their own use as final consumption or capital formation.*** The value of output for own final use is determined as the sum of the following:

a. The value of goods produced by an unincorporated enterprise and consumed by the same household;

b. The value of services provided to households by paid domestic staff;

c. The value of owner-occupied housing services;

d. The value of the fixed assets produced by an establishment that are retained within the same enterprise for use in future production (own-account gross fixed capital formation);

e. The value of changes in inventories of finished goods and work-in-progress intended for one or other of the above uses;

f. In exceptional cases, as described later in this section, there may be output for own intermediate use.

Goods produced by households

7.125 All goods produced by households are within the production boundary and those that are not delivered to other units should be treated as either being consumed immediately or stored in inventories for later use.

Services of domestic staff

7.126 Paid domestic staff (child minders, cooks, gardeners, chauffeurs, etc.) are formally treated as employees of an unincorporated enterprise that is owned by the household. The services produced are consumed by the same unit that produces them and they constitute a form of own-account production. By convention, any intermediate costs in the production of the domestic services are treated not as intermediate consumption of the output of the domestic services but as final consumption expenditure of the household. Thus the value of the output produced is deemed to be equal to the remuneration of employees paid, including any compensation in kind such as food or accommodation.

Owner-occupied housing services

7.127 Households that own the dwellings they occupy are formally treated as owners of unincorporated enterprises that produce housing services consumed by those same households. When well-organized markets for rented housing exist, the output of own-account housing services can be valued using the prices of the same kinds of services sold on the market in line with the general valuation rules adopted for goods or services produced on own account. In other words, the output of the housing services produced by owner occupiers is valued at the estimated rental that a tenant would pay for the same accommodation, taking into account factors such as location, neighbourhood amenities, etc. as well as the size and quality of the dwelling itself. The same figure is recorded under household final consumption expenditures. In many instances, no well-organized markets exist and other means of estimating the value of housing services must be developed.

7.128 There are two phenomena which may potentially lead to double-counting. The first one concerns the own-account production of electricity through the use of solar panels and wind power plants and the production of heat for heating water or heating a dwelling through geothermal heat or heat pumps. Installations for the generation and use of renewable energy (electricity or heat) may lead to higher market rentals for rented dwellings. Depending on the estimation and stratification methods, this “rental premium” may also feed into the output of owner-occupied housing services, and in this case the owner-occupied housing services need to be adjusted for this rental premium. In cases where very few rented dwellings have renewable energy installations, the risk of double-counting is expected to be negligible.

7.129 The other potential risk for double-counting concerns the phenomenon that households may sublet their own

dwelling for short periods of time, for example via online market places for accommodation rentals. Again, depending on estimation and stratification methods, one may assume that this "rent premium" affects the output of housing services produced on own-account, as households renting a dwelling may not be allowed to sub-lease the dwelling for short periods of time. If this is indeed the case, the estimated value of the services related to owner-occupied dwellings needs to split into the rentals from leasing the dwelling for short periods of time, and the part reflecting the consumption of owner-occupied housing serves. In addition, any purchases in relation to the leasing of the dwelling may need to be reclassified from final consumption expenditure to intermediate consumption.

Own gross fixed capital formation

7.130 Goods or services used for own gross fixed capital formation can be produced by any kind of enterprise, whether corporate or unincorporated. They include, for example, the special machine tools produced for their own use by engineering enterprises, or dwellings, or extensions to dwellings, produced by households. A wide range of construction activities may be undertaken for the purpose of own gross fixed capital formation in rural areas in some countries, including communal construction activities undertaken by groups of households. In addition, intellectual property products such as R&D, software products (including artificial intelligence) and data and databases, may be produced on own account.

Changes in inventories

7.131 Additions to work-in-progress on structures intended for own use continue to be treated as changes in inventories until they are completed. As it may not always be feasible to distinguish work-in-progress from completed products, particularly in the case of intellectual property products, the relevant additions to work-in-progress may need to be treated as acquisitions of fixed assets by their producers. Goods or services produced for own final use may be placed in inventories of finished products for use later. They are valued at the basic prices of similar products sold on the market at the time they enter inventories or by their costs of production if no suitable basic prices are available.

Own intermediate consumption

7.132 It is unusual to record goods and services used as intermediate consumption within the same establishment but there are occasions where it may be desirable. If such recording is made, the goods and services in question add to both intermediate consumption and output so value added is unaffected by this practice.

7.133 If an activity such as delivery services is of particular interest and there is a diversity of practice about whether it is treated as secondary output (that is, is charged for) or as being for own use (not charged for) then it may be desirable to show all delivery services as if they were secondary products with the output shown as own intermediate consumption where appropriate.

7.134 As explained in paragraph 7.114, if a product is delivered by one establishment to another within the same enterprise, the delivery is recorded as output of the first establishment and intermediate consumption of the second only when the second establishment assumes the responsibility for making the decisions about the level of supply and prices at which the output is delivered to the market. When this is not the case, the output of the first establishment is shown as entering inventories while the second establishment delivers a processing service and charges for it. If a production account is being compiled for the enterprise, in the first case it may be preferable to show the product as both output and intermediate consumption of the enterprise rather than to consolidate it out. In the second case, the output of the enterprise will be the value of the product as produced by the first establishment plus the processing fee for the second.

7.135 In some cases, part of the current output may be placed in inventories for use as intermediate consumption in future. An example is agriculture where some of the current crop may be used for seed in future.

Valuation of output for own final use

7.136 Output for own final use should be valued at the basic prices at which the goods and services could be sold if offered for sale on the market. In order to value them in this way, goods or services of the same kind must actually be bought and sold in sufficient quantities on the market to enable reliable exchange prices, or market prices, to be calculated for use for valuation purposes. The expression "on the market" means the price that would prevail between a willing buyer and willing seller at the time and place that the goods and services are produced. In the case of agricultural produce, for example, this does not necessarily equate to the prices in the local market where transportation costs and possibly wholesale margins may be included. The nearest equivalent price is likely to be the so-called "farm-gate" price; that is, the price that the grower could receive by selling the produce to a purchaser who comes to the farm to collect the produce.

7.137 When reliable exchange prices cannot be obtained, a second best procedure must be used in which the value of the output of the goods or services produced for own final use is deemed to be equal to the sum of their costs of production: that is, as the sum of:

a. Intermediate consumption;

b. Remuneration of employees;

c. Other taxes, less subsidies, on production.

d. Depreciation (and depletion where relevant) related to capital used in production;

e. Net return to capital used in production;

f. Rent payable on the use of (rented) non-produced non-financial assets;

7.138 For unincorporated enterprises, the compensation for labour input and the return to capital are not separately available, both being part of mixed income. In these cases, it may nevertheless be useful for certain types of analysis to impute an estimate of labour input separately, based on wage rates paid for similar kinds of work. The return to capital could then be estimated following the standard procedure.

7.139 It will usually be necessary to value the output of own-account construction on the basis of costs as it is likely to be difficult to make a direct valuation of an individual and specific construction project that is not offered for sale. When the construction is undertaken for itself by an enterprise, the requisite information on costs may be easily ascertained, but not in the case of the construction of dwellings by households or communal construction for the benefit of the community undertaken by informal associations or groups of households. Most of the inputs into communal construction projects, including labour inputs, are likely to be provided free so that even the valuation of the inputs may pose problems. As unpaid labour may account for a large part of the inputs, it is important to make some estimate of its value using wage rates paid for similar kinds of work on local labour markets. While it may be difficult to find an appropriate rate, it is likely to be less difficult than trying to make a direct valuation of a specific construction project itself. The fact that an imputation is made for the value of labour input is a means to approximate the exchange price for the construction. It does not imply that these labour costs should also be treated as remuneration of employees. As explained in chapter 8 on Earned income accounts, when labour is provided on a voluntary basis to a producer unit other than the labourer's own household, no imputation for remuneration of employees is made. If labour is provided for a nominal payment, only the nominal payment is recorded as remuneration of employees. The other labour costs are treated as mixed income.

Non-market output

7.140 ***Non-market output (P13) consists of goods and individual or collective services produced by government, the central bank and non-profit institutions serving households (NPISHs) that are supplied free, or at prices that are not economically significant, to other institutional units or the community as a whole***. Although this output is shown as being acquired by government, the central bank and NPISHs in the use of income account, it should not be confused with production for own use. The expenditure is made by government, by the central bank and by NPISHs but the use of individual goods and services is by households, and the use of collective services by households or other resident institutional units. Thus non-market output should never be confused with output for own use where the producer unit not only has imputed expenditure on the output but also actually uses the output. Chapter 10 on Use of income accounts discusses the difference between expenditure and use in more detail.

7.141 As explained above, government units, the central bank or NPISHs may engage in non-market production because of market failure or as a matter of deliberate economic or social policy. Such output is recorded at the time it is produced, which is also the time of delivery in the case of non-market services. In general, however, it cannot be valued in the same way as goods or services produced for own final consumption or own capital formation that are also produced in large quantities for sale on the market. There are no markets for collective services such as public administration and defence, but even in the case of non-market education, health or other services provided to individual households, suitable prices may not be available. It is not uncommon for similar kinds of services to be produced on a market basis and sold alongside the non-market services but there are usually important differences between the types and quality of services provided. In most cases it is not possible to find enough market services that are sufficiently similar to the corresponding non-market services to enable their prices to be used to value the latter, especially when the non-market services are produced in very large quantities.

7.142 The value of the non-market output provided without charge to households is estimated as the sum of costs of production, as follows:

a. Intermediate consumption;

b. Remuneration of employees;

c. Other taxes, less subsidies, on production;

d. Depreciation (and depletion where relevant) related to capital used in production;

e. Net return to capital used in production;

f. Rent payable on the use of (rented) non-produced non-financial assets.

As noted before, on pragmatic grounds, a return to capital for city parks and historical monuments is excluded for non-market output.

7.143 If the output is made available at nominal cost, the prices are not economically significant prices and may reflect neither relative production costs nor relative consumer preferences. They therefore do not provide a suitable basis for valuing the outputs of the goods or services concerned. The non-market output of goods or services sold at these prices is valued in the same way as goods or services provided free, that is, by their costs of production. Part of this output is purchased by households, the remainder constituting final consumption expenditures by government units or NPISHs.

7.144 Government units, the central bank and NPISHs may be engaged in both market and non-market production. Whenever possible, separate establishments should be distinguished for these two types of activities, but this may not always be feasible. Thus, a non-market establishment may have some receipts from sales of market output produced by a secondary activity: for example, sales of reproductions by a non-market museum. However, even though a non-market establishment may have sales receipts, its total output covering both its market and its non-market output is still valued by the production costs. The value of its market output is given by its receipts from sales of market products, the value of its non-market output being obtained residually as the difference between the values of its total output and its market output. The value of receipts from the sale of non-market goods or services at prices that are not economically significant remains as part of the value of its non-market output.

Market and non-market producers

7.145 ***Market producers are establishments, all or most of whose output is market output. Non-market producers consist of establishments owned by government units, the central bank or non-profit institutional serving households (NPISHs) that supply goods or services free, or at prices that are not economically significant, to households or the community as a whole.*** These producers may also have some sales of secondary market output whose prices are intended to cover their costs or earn a surplus: for example, sales of reproductions by non-market museums. Though government, the central bank and NPISHs may have establishments undertaking market production, including own account capital construction, most of their activity will be undertaken on a non-market basis.

7.146 When production for own final use is undertaken by a government unit, the central bank or an NPISH, it is treated as being undertaken by a non-market producer. It may also be undertaken by market producers or by units outside

general government, the central bank and NPISHs who produce only for own final use.

F. The output of particular industries

1. Introduction

7.147 The rules governing the recording and valuation of output are not sufficient to determine the way in which the output of certain kinds of industries, mostly service industries, such as wholesale and retail trade and financial corporations, is measured. The following sections provide further information about the measurement of the output of a number of specific industries. For convenience, the industries concerned are given in the same order as they appear in the *ISIC*.

7.148 This section does not address issues related to the measurement of output in the case of global production arrangements resulting from the increased globalisation of the worldwide economy. Further details on such arrangements and the related complexities, including their impact on the interpretation and analysis of macro-economic aggregates, can be found in chapter 23 on Globalisation.

2. Agriculture, forestry and fishing

7.149 The growth of crops, trees, livestock or fish which are controlled by, managed by and under the responsibility of institutional units constitute a process of production in an economic sense. Growth is not to be construed as a purely natural process that lies outside the production boundary. Many processes of production exploit natural forces for economic purposes, for example, hydroelectric plants exploit rivers and gravity to produce electricity.

7.150 The measurement of the output of agriculture, forestry and fishing is complicated by the fact that the process of production may extend over many months, or even years. Many agricultural crops are annual with most costs incurred at the beginning of the season when the crop is sown and again at the end when it is harvested. However, immature crops have a value depending on their closeness to harvest. The value of the crop has to be spread over the year and treated as work-in-progress. Often the final value of the crop will differ from the estimate made of it and imputed to the growing crop before harvest. In such cases revisions to the early estimates will have to be made to reflect the actual outcome. When the crop is harvested, the cumulated value of work-in-progress is converted to inventories of finished goods that is then run down as it is used by the producer, sold or is lost to vermin.

7.151 Some plants and many animals take some years to reach maturity. In this case, the increase in their value is shown as output and treated as increases in fixed capital or inventories depending on whether the plant or animal yields repeat products or not. (There is more discussion of this distinction in chapter 11 on Capital account.) The value of the increase in the plants or animals should take account of the delay before the yield from them is realized as explained in chapter 17 on Capital services. Once the plants or animals yielding repeat products have reached maturity, they will decline in value and this decline should be recorded as depreciation.

3. Machinery, equipment and construction

7.152 The production of high value capital goods such as ships, heavy machinery, buildings and other structures may take several months or years to complete. The output from such production must usually be measured by work-in-progress and cannot be recorded simply at the moment in time when the process of production is completed. The way in which work-in-progress is to be recorded and valued is explained in chapter 17 on Capital services.

7.153 When a contract of sale is agreed in advance for the construction of buildings and structures, but not for other production spreading over several periods, the output produced each period is treated as being sold to the purchaser at the end of each period, that is, as a sale. In effect, the output produced by the construction contractor is treated as being sold to the purchaser in stages as the latter takes legal possession of the output. It is recorded as work-in-progress by the purchaser and not as work-in-progress by the producer. When the contract calls for stage payments, the value of the output may often be approximated by the value of stage payments made each period. In the absence of a contract of sale, however, the incomplete output produced each period must be recorded as work-in-progress of the producer. Dwellings built speculatively (that is, without a prior contract of sale) remain

in the inventories of the construction company until sold, changing status within inventories from work-in-progress to finished products if they remain unsold on completion.

4. Electricity and heat

7.154 The measurement of output in the area of electricity and heat is relatively straightforward. However, the production, by households, of electricity through the use of solar panels and wind power plants and the production of heat through geothermal heat or heat pumps may raise some issues. Specifically for electricity, a complication comes from the fact that different production and consumption models exist, often overlapping even within the same production unit. In fact, electricity can be used directly by the producing household for own final consumption, can be sold to the local grid, or a mix of the two (with complicated price structures involved). On the contrary, household production of heat is normally used for own final consumption.

7.155 Output for own final use should be valued at the basic price at which the goods or services could be sold on the market. For the production of electricity for own final use, the feed in tariff that the household would receive for electricity fed to the grid at the moment of use is considered the most appropriate valuation. In this respect, the use of batteries allows households to store excess electricity during peak times and use it, either for own final use or for delivery to the grid, in the evenings when feed in tariffs are generally higher. This difference in prices, by taking advantage of regular, predictable price variations due to changes in the patterns of supply and demand is to be treated as output, not as holding gains and losses; see also below. Receipts from deliveries to the grid in periods of excess production as well as payments for the use of electricity in periods that the own-account production is not sufficient to meet demands should be recorded accordingly. Charges to feed electricity to the grid are to be treated as a reduction in the basic price of electricity generated for own use or fed to the grid.

5. Transportation and storage

Transportation

7.156 The output of transportation is measured by the value of the amounts receivable for transporting goods or persons. In economics a good in one location is recognized as being a different quality from the same good in another location, so that transporting from one location to another is a process of production in which an economically significant change takes place even if the good remains otherwise unchanged. The volume of transport services may be measured by indicators such as tonne-kilometres or passenger-kilometres, which combine both the quantities of goods, or numbers of persons, and the distances over which they are transported. Factors such as speed, frequency or comfort also affect the quality of services provided.

Storage

7.157 Although the production of storage for the market may not be very extensive, the activity of storage is important in the economy as a whole as it is carried out in many enterprises. During storage the inventories of goods have to be physically stored somewhere. Many goods have to be stored in a properly controlled environment and the activity of storage can become an important process of production in its own right whereby goods are "transported" from one point of time to another. In economics, it is generally recognized that the same goods available at different times, or locations, may be qualitatively different from each other and command different prices for this reason. The increase in price of a product due to the fact that it has been in storage and storage costs have been incurred is a production process. However, it is important that the increase in price due to storage is clearly distinguished from holding gains and losses, which must be excluded from the value of production in the case of storage as in other activities.

7.158 When goods are first produced, they may be held in store for a time in the expectation that they may be sold, exchanged or used more advantageously in the future. If the increase in value simply reflects a rise in price with no change in quality resulting from being held in storage, then there is no further production during the period in addition to the costs of storage just described. However, there are three reasons why the increase in value can be construed as further production. The first is that the production process is sufficiently long that discounting factors should be applied to work put in place significantly long before delivery. The second reason is that the quality of

the good may improve with the passage of time (such as wine). The third reason is that there may be seasonal factors affecting the supply or the demand for the good that lead to regular, predictable variations in its price over the year, even though its physical qualities may not have changed otherwise. In all these circumstances, storage can be regarded as an extension of the production process over time. The storage services become incorporated in the goods, thereby increasing their value while being held in store. Thus, in principle, the values of additions to inventories should include not only the values of the goods at the time they are stored but also the value of the additional output produced while the goods are held in store.

7.159 However, most manufactured goods are produced and sold continuously throughout the year and are not subject to regular changes in supply or demand conditions. Nor do they "mature" while being stored. Changes in the prices of such goods while in inventories cannot be treated as additions to work-in-progress. In order to estimate the increase in the value of goods stored over and above the storage costs, use may be made of the expected increase in value over and above the general rate of inflation over a predetermined period. Any gain that occurs outside the predetermined period continues to be recorded as a holding gain or loss. Further explanation of the calculation of the value of storage and its separation from holding gains and losses is given in the annex to this chapter.

7.160 This inclusion of output due to storage applies only to goods that take a long time to complete, those that have an established annual seasonal pattern or those where maturing is part of the regular production process. It does not apply to holding financial assets, valuables or other non-financial assets including land and buildings. Even if anticipated increases in value result in these cases, the motive for holding the items is speculation. The increases in value are treated as holding gains and not as part of the production process.

6. Wholesale and retail distribution

7.161 Although wholesalers and retailers actually buy and sell goods, the goods purchased are not treated as part of their intermediate consumption when they are resold with only minimal processing such as grading, cleaning, packaging, etc. Wholesalers and retailers are treated as supplying services to their customers by storing and displaying a selection of goods in convenient locations and making them easily available for customers to buy. Their output is measured by the total value of the distribution margins realized on the goods they purchase for resale. ***A distribution margin is defined as the difference between the actual (or imputed) price realised on a good purchased for resale and the price that would have to be paid by the distributor to replace the good at the time it is sold or otherwise disposed of.*** The margins realised on some goods may be negative if their prices have to be marked down. They must also be negative on goods that are never sold because they go to waste or are stolen.

7.162 The standard formula for measuring output has to be modified for wholesalers or retailers by deducting from the value of the goods sold or otherwise used the value of the goods that would need to be purchased to replace them. The latter includes the additional goods needed to make good recurrent losses due to normal wastage, theft or accidental damage. In practice, the output of a wholesaler or retailer is given by the following identity:

the value of output =

the value of sales

plus the value of goods purchased for resale and used for intermediate consumption, remuneration of employees, etc.

minus the value of goods purchased for resale

plus the value of additions to inventories of goods for resale

minus the value of goods withdrawn from inventories of goods for resale

minus the value of recurrent losses due to normal rates of wastage, theft or accidental damage.

7.163 The following points should be noted:

a. Goods sold are valued at the prices at which they are actually sold, even if the distributor has to mark their prices down to get rid of surpluses or avoid wastage. Allowance should also be made for the effect of reductions in price due to loyalty programmes or other schemes to offer reduced prices to certain

customers in certain circumstances.

b. Goods provided to employees as remuneration in kind should be valued at the current purchasers' prices payable by the distributors to replace them; that is, the realised margins are zero. Similarly, goods withdrawn by the owners of unincorporated enterprises for their own final consumption should be valued at the current purchasers' prices payable by the distributors to replace them.

c. Goods purchased for resale should be valued excluding any transport charges invoiced separately by the suppliers or paid to third parties by wholesalers or retailers: these transport services form part of the intermediate consumption of the wholesalers or retailers.

d. Additions to inventories of goods for resale should be valued at the prices prevailing at the time of entry into inventories.

e. The value of goods withdrawn from inventories of goods for resale depends on whether the goods were acquired with the intention of making a real holding gain over a given period in storage. In the general case, when the goods being resold were not expected to realize a real holding gain while in storage, the value of the goods on withdrawal from inventories should be the cost to the wholesaler or retailer at the time of the withdrawal of acquiring exactly similar replacement goods for later sale. This valuation is necessary to exclude holding gains and losses from the measurement of output, as is the general rule in the integrated framework of the SNA. However, when the goods have been stored for reasons of seasonal variation in prices or as part of the maturing process, the expected real holding gain over the anticipated period is deducted from the replacement value of goods withdrawn from inventories. This deduction is fixed in value at the time the goods enter storage and is not altered in the light of actual holding gains, real or nominal.

f. The value of recurrent losses due to wastage, theft or accidental damage; goods lost are valued in the same way as goods withdrawn from inventories. For this reason, the two terms are often combined.

g. Goods and services can also be ordered online (e-commerce) from a retail or wholesale trader, directly from the producer or supplier of the good or service, or via a digital intermediation platform. The output of a digital intermediation platform consists of digital intermediation services in the form of fees. It does not include the sales and purchases of the goods and services that the platform intermediates. For more information on the treatment of digital intermediation platforms and related intermediation services, see chapter 22 on Digitalisation.

7.164 The costs of storage incurred by wholesalers and retailers are not added to the value of the goods when they are withdrawn from inventories but are treated as part of intermediate consumption.

7.165 The margins realised on goods purchased for resale thus vary according to their eventual use. The margins realised on goods sold at the full prices intended by the distributors could be described as the normal margins. In fixing these margins, distributors take account not only of their ordinary costs such as intermediate consumption and remuneration of employees but also of the fact that some goods may ultimately have to be sold off at reduced prices while others may go to waste or be stolen. The margins realised on goods whose prices have to be marked down are obviously less than the normal margins and could be negative. The margins on goods used to pay employees as remuneration in kind or withdrawn for final consumption by owners are zero because of the way these goods are valued. Finally, the margins on goods wasted or stolen are negative and equal to the current purchasers' prices of replacements for them. The average margin realised on goods purchased for resale may be expected to be less than the normal margin, possibly significantly less for certain types of goods such as fashion goods or perishable goods.

7. Output of the central bank

7.166 Central banks provide a variety of financial services, which may differ across countries. Typically, one can distinguish a certain mix of the following broad groups of services: monetary policy services, including by issuing currency and regulating money supply; services related to promoting financial stability, including regulation and macroprudential supervision; services related to managing international reserves and the payments systems; and acting as banker to government.

7.167 In general, these services are provided for free, or at prices that are not economically significant, for the benefit of the society as a whole. This clearly holds for monetary policy services and services related to the management of international reserves, but it also applies to, for example, services related to promoting financial stability and managing the payments systems. While these types of services may be important for financial intermediaries, their general purpose is to serve the broader financial system, including markets and market infrastructure, and the community as a whole.

7.168 Regarding supervision services, the stronger arguments also point in the direction of considering these services as being provided for the benefit of the society as a whole, to safeguard the society from poor business practices. Supervision services are usually not put in place to safeguard an individual financial corporation from putting their own funds/reserves at risk, which first and foremost would be the responsibility of the relevant corporation and its shareholders. In the case of these services, some payments may be made by financial corporations, but these payments are typically compulsory and not in proportion to the services provided, and should therefore be treated as current transfers.

7.169 In respect of the possible provision of implicit financial services on loans and deposits (see below) by central banks, it can be noted that central banks usually do not hold loans and deposits, predominantly to/from financial corporations and government, for commercial reasons. Central banks are atypical financial intermediaries, which take on liabilities and engage in lending, not with the purpose of earning a margin between the corresponding income streams, but to conduct monetary policy and meet other public functions. Even though their activity facilitates the channelling of funds between lenders and borrowers, their decisions in terms of volumes intermediated and/or prices charged are not motivated by the same considerations which are relevant for "regular" financial intermediaries like commercial banks. As such, the concept of implicit financial services on loans and deposits could thus be considered as irrelevant for them and certainly non-representative of their actual output. Furthermore, for a considerable part of the loans and deposits on the balance sheets of central banks, the interest rates are set in such a way that they have an impact on the market interest rates, thus also affecting the reference rates for the calculation of implicit financial services on loans and deposits, directly and indirectly. The reference rate, which can be looked upon as an exogenous variable for financial intermediaries charging this type of financial services, is to a certain degree endogenous for central banks.

7.170 As a consequence, the above services of central banks are considered as non-market output provided to the society as a whole (i.e., collective services), and total output is to be valued at the sum of costs, while compulsory payments by financial corporations to the central bank should be treated as current transfers, and not as purchases of services. In addition, central banks may occasionally receive revenue from sales of market output produced as a secondary activity. However, total output of the central bank covering both its market and its non-market output is still valued by their costs of production. The value of its market output is given by its receipts from sales of market products, the value of its non-market output being obtained residually as the difference between the values of its total output and its market output.

8. Financial services other than those associated with insurance and pension funds

7.171 A comprehensive discussion of the contribution of financial assets and liabilities to the generation and distribution of income and changes in wealth in an accounting period is given in chapter 25 on Selected issues in financial instruments. (See chapter 26 for details on the measurement of financial services in the case of Islamic finance.) What follows is a summary of the main aspects affecting the general measurement of the output of financial services. There are three types of financial activities; financial intermediation, the services of financial auxiliaries and other financial services. Financial services include monitoring services, convenience services, liquidity provision, risk assumption, underwriting and trading services.

7.172 Financial intermediation involves financial risk management and liquidity transformation, activities in which an institutional unit incurs financial liabilities for the purpose of acquiring mainly financial assets. Corporations engaged in these activities obtain funds, not only by taking deposits but also by issuing bills, bonds or other securities. They use these funds as well as own funds to acquire mainly financial assets not only by making advances or loans to others but also by purchasing bills, bonds or other securities. Auxiliary financial activities facilitate risk management and liquidity transformation activities. Financial auxiliaries, which are the units primarily engaged in auxiliary financial activities, typically act on behalf of other units and do not put themselves at risk by incurring financial liabilities or by acquiring financial assets as part of an intermediation service.

7.173 Financial services are produced almost exclusively by financial corporations because of the usually stringent supervision of the provision of those services. Similarly, financial corporations rarely produce other services. If a retailer wishes to offer credit facilities to its customers, for example, the credit facilities are usually offered by a subsidiary of the retailer, the subsidiary being treated as a financial corporation in its own right regardless of the classification of the parent. Financial corporations may also create subsidiaries dealing with only particular forms of financial services. For example, a credit card operation may be associated with a given bank but may be institutionally separate.

7.174 Financial services may be paid for explicitly or implicitly. Some transactions in financial assets may involve both explicit and implicit charges. Four main ways in which financial services are provided and charged for may be considered:

a. Financial services provided in return for explicit charges;

b. Financial services provided in association with interest charges on loans and deposits;

c. Financial services associated with the acquisition and disposal of financial assets and liabilities in financial markets;

d. Financial services associated with insurance and pension schemes.

The first three types of financial services are discussed below, while the following section deals with the financial services associated with insurance and pension schemes. In chapter 25 on Selected issues in financial instruments, there is an overview of the transactions and other flows associated with each type of financial instrument. The recording of investment income is described in chapter 8 on Earned income accounts, and the acquisition and disposal of financial assets and liabilities in chapter 12 on Financial account. Changes in the value of financial assets and liabilities not arising from transactions are described in chapter 13 on Other changes is assets and liabilities account.

Financial services provided in return for explicit charges and financial services provided in relation to investment funds

7.175 Many services come under this heading and may be provided by different categories of financial corporations. Deposit taking institutions, such as banks, may charge households to arrange a mortgage, manage an investment portfolio, give taxation advice, administer an estate, and so on. Specialized financial corporations may charge non-financial corporations to arrange a flotation of shares or to administer a restructuring of a group of corporations. However, the most pervasive and probably largest direct fee is likely to be that charged by credit card issuers to the units that accept credit cards as a means of payment for the goods and services they provide. The charge is usually calculated as a percentage of the sale; in the case of retailers the sale value corresponds to turnover and not output. Although the percentage is usually small in absolute terms, maybe one or two percent, the fact that it is applied to such large totals means that the total value of the charge is very large. The charge represents output of the credit card companies and intermediate consumption of the corporations that accept credit cards as means of payment. Ignoring the role of the credit card company does not affect the measurement of the expenditure (usually final consumption or exports) on the goods and services concerned but does underestimate the costs of the provider of goods and services and the output of the credit card company. This in turn leads to a misallocation of value added from the credit card company to the provider of the goods and services paid for by credit card.

7.176 The example of the credit card company is one that clearly demonstrates that a financial corporation may provide services that are paid for by different means by different customers or in different circumstances. The fee charged to the corporations accepting a credit card as means of payment has just been discussed. A card holder may also be charged an explicit fee, usually each year, for holding the card. In addition, if a card holder may use the credit facilities offered by the card, he will pay indirect charges associated with interest payable on the outstanding credit (which is treated as a loan in the SNA).

7.177 Some institutional units have the sole or predominant function of holding financial assets on behalf of their owners. For example, some mutual funds, holding companies, trusts, and special purpose entities serve this purpose. In the process of managing those assets, these enterprises incur administrative expenses such as payments to fund managers, custodians, banks, accountants, lawyers, or their own staff. The expenses can be

charged for explicitly as a fee, or implicitly by being paid out of investment income received or out of the assets of the enterprise. The expenses implicitly paid for should be recognized as a service to the owners. For example, a hedge fund may distribute a proportion of the net income of the fund to the unit that manages the fund, which should be recorded as a charge for services. Similarly, a custodian may charge lower fees in exchange for the right to on-lend securities.

7.178 Implicit asset management service charges can be measured at cost. The corresponding entry is to increase the net value of investment income payable to the investor to the gross value before deduction of the expenses. Without the recognition of the output of such services, the costs incurred would lead to negative operating surplus for the asset management enterprises. With this treatment, these enterprises have a net operating surplus of zero.

7.179 Institutional units may be set up for holding and managing assets on behalf of others. They may have employees of their own, but more often engage the services of administrators, trustees and/or portfolio managers to manage the operations of the funds. This is the case for most investment funds. Importantly, the funds themselves are treated as separate institutional units, distinct from the unit managing them. The investment funds pay fees to these service providers, and make use of the required human resources to support the funds operations (buying and selling of securities, providing legal, accounting, and other services required to ensure that the fund is operating efficiently). The fund in turn charges a service fee to investors which is equivalent to the amount of operating expenses and is usually reported as an annual percentage of the assets in the fund. In addition, holders of investment fund shares/units may be charged with fees on specific transactions, such as redemption fees, exchange fees imposed for transferring shares/units within the same fund group or account fees. Both types of fees are treated as financial services that are provided directly from the original professional providers to the shareholders. Implicit financial services on loans and deposits may also be charged to investment funds. These implicit service charges should also be recorded as being paid by the shareholders of the funds to the deposit-taking corporations, similar to the treatment of explicit service charges paid to them. Investment funds are thus not treated as providers or consumers of services, and their output, intermediate consumption and remuneration of employees is equal to zero.

Financial services provided in association with interest charges on loans and deposits

7.180 One traditional way in which financial services are provided is by means of financial intermediation. This is understood to refer to the process whereby a financial corporation such as a bank accepts deposits from units wishing to receive interest on funds for which the unit has no immediate use and lends them to other units whose funds are insufficient to meet their needs. The bank thus provides a mechanism to allow the first unit to lend to the second. Each of the two parties pays a fee to the bank for the service provided, the unit lending funds by accepting a rate of interest lower than that paid by the borrower, the difference being the combined fees implicitly charged by the bank to the depositor and to the borrower. From this basic idea the concept emerges of a "reference" rate of interest. The difference between the interest rate actually paid to banks by borrowers and the reference rate plus the difference between the reference rate and the interest rate actually paid to depositors represent charges for implicit financial services on loans and deposits.

7.181 However, it is seldom the case that the amount of funds lent by a financial corporation exactly matches the amount deposited with them. Some money may have been deposited but not yet loaned; some loans may be financed by the bank's own funds and not from borrowed funds. However, the depositor of funds receives the same amount of interest and service whether or not his funds are then lent by the bank to another customer, and the borrower pays the same rate of interest and receives the same service whether his funds are provided by intermediated funds or the bank's own funds. For this reason an indirect service charge is to be imputed in respect of all loans and deposits offered by a financial corporation irrespective of the source of the funds. The reference rate applies to both interest paid on loans and interest paid on deposits so that the amounts of interest recorded as such in the integrated framework of the SNA are calculated as the reference rate times the level of loan or deposit in question. The difference between these amounts and the amounts actually paid to, or received from, the financial corporation are recorded as service charges paid by the borrower or depositor to the financial corporation. For clarity the amounts based on the reference rate recorded in the integrated framework of the SNA as interest are described as "SNA interest" and the total amounts actually paid to or by the financial corporation are described as "bank interest". The implicit service charge is thus the sum of the bank interest on loans less the SNA interest on the same loans plus the SNA interest on deposits less the bank interest on the same deposits. The service charge is payable by the unit in receipt of the loan or owning the deposit as appropriate.

7.182 By convention within the integrated framework of national accounts, these indirect charges in respect of interest apply only to loans and deposits and only when those loans and deposits are provided by, or deposited with, financial corporations. The financial corporations in question need not be resident; nor need the clients of the financial corporation be resident. Thus imports and exports of this type of financial service are possible. Nor need the financial corporation necessarily offer deposit-taking facilities as well as making loans. The financial subsidiaries of retailers are examples of financial corporations that make loans without accepting deposits. A money lender who has sufficiently detailed accounts to be treated as an actual or quasi-corporation may also receive payments for this sort of charges; indeed since money lenders usually charge especially high rates of interest, their service charges may exceed the SNA interest payments by significant amounts.

7.183 The reference rate to be used in the calculation of SNA interest is a rate between bank interest rates on deposits and loans. However, because there is no necessary equality between the level of loans and deposits, it cannot be calculated as a simple average of the rates on loans or deposits. As liquidity transformation services are considered to be part of the implicit financial services on loans and deposits, it is recommended to use a single temporal reference rate, and not two reference rates distinguishing short-term and long-term loans and deposits. The calculation of the single reference rate should be determined according to national circumstances, using any of the following approaches:

a. A reference rate based on a single observable exogenous rate for a specific instrument, such as interbank lending rates;

b. A reference rate based on a weighted average of observable exogenous rates of maturities with different terms (weighted by the stock of loans and deposits in each maturity); or

c. A weighted average of the endogenous interest rates on loans and deposits.

7.184 During periods of volatile movements in reference rates and when liquidity markets begin to disfunction, considerable care should be taken in determining estimates of implicit financial services on loans and deposits. These periods may be characterised by negative estimates of implicit financial services on loans and deposits, particularly for depositors, but also for borrowers. When such incidences occur, countries are encouraged to review the applicability of the underlying reference rate to calculate the implicit financial services on loans and deposits for that period. The first and simplest approach is that countries consider taking the simple weighted average of the interest rates on loans and deposits for those years with negative implicit service charges for either depositors or borrowers. The second, and slightly more complicated approach, takes the view that, during periods when markets are dis-functional, banks may offer financial inducements to attract depositors, meaning that part of what is now typically recorded as bank interest may actually consist of a transfer element. In this approach, during periods of negative implicit financial services on loans or deposits calculated using the conventional approach, the implicit service charges should instead be calculated by assuming that the margin (implicit financial services as a per cent of deposits or loans) banks charge on deposits or loans is broadly stable over time.

7.185 As noted before, liquidity transformation is considered to be part of implicit financial services on loans and deposits. Less clarity exists around the inclusion or exclusion of credit default risk. While there is conceptual merit in excluding credit default risk from implicit financial services on loans and deposits, at present many countries are not in a position to do this in a way that ensures reasonable comparability across countries. Having said that, a number of countries have demonstrated that it is feasible, in their cases, to produce meaningful results and these countries have compiled estimates of implicit financial services on loans and deposits on this basis. Recognising that these improvements will take some time to materialise, it is recommended that in the interest of maintaining international comparability, those countries that exclude credit default risk from their estimates of implicit financial services on loans and deposits also provide supplementary estimates that include credit default risk.

7.186 For international trade in implicit financial services on loans and deposits, different currencies may be involved, and the relevant service charges should be calculated by at least two groups of currencies (national and foreign currency). Preferably, separate reference rates should be applied for each currency with a significant proportion of loans or deposits. The reference rate for a specific currency need not be the same for providers of implicit financial services on loans and deposits resident in different economies. Although under normal circumstances they should be expected to be relatively close, the rate should be taken, if available, from the financial markets of the home market of the currency, and preferably be the same as the one used by statistical compilers in that economy. In cases where negative implicit financial services on interbank loans occur, and the relevant negative

service is received by a resident financial corporation deemed to be the depositor, these should be recorded as liquidity services provided by the resident financial corporation (increasing the institution's output and the economy's exports) and should not be recorded as negative imports. For the counterparty these flows should be recorded as intermediate consumption of liquidity services and imports, and not negative exports/output.

7.187 Banks may offer loans that they describe as being fixed interest loans. This is to be interpreted as a situation where the level of bank interest is fixed but as the reference rate changes, the level of SNA interest and the service charge will vary.

7.188 When an enterprise acquires a fixed asset under the terms of a financial lease, a loan is imputed between the lessor and the lessee. Regular payments under the lease are treated as being payments of interest and repayment of capital. When the lessor is a financial corporation, the interest payable under the terms of a financial lease corresponds to bank interest and should be separated into SNA interest and financial service charge as for any other loan.

7.189 Even when a loan is described as non-performing, interest and the associated service charge continue to be recorded in the SNA. There is discussion on the treatment of non-performing loans in chapter 14 on Balance sheet.

Financial services associated with the acquisition and disposal of financial assets and liabilities in financial markets

7.190 Debt securities such as bills and bonds are other forms of financial assets that give rise to interest payments, interest being payable to the owner of the security by the issuer. As described in chapter 25 on Selected issues in financial instruments, some of these interest charges may themselves be imputed from changes in the value of securities as they approach maturity. When a financial corporation offers a security for sale, a service charge is levied, the purchase price (or ask price) representing the estimated market value of the security plus a margin. Another charge is levied when a security is sold, the price offered to the seller (the bid price) representing the market value less a margin.

7.191 Prices of securities may change rapidly and to avoid including holding gains and losses in the calculation of the service margins, it is important to calculate the margins on sales and purchases in terms of mid-prices. The mid-price of a security is the average at a given point in time between the bid and ask price. Thus the margin on the purchase of a security is the difference between the ask price and mid-price at the time of the purchase and the margin on a sale is the difference between the mid-price and the bid price at the time of the sale.

7.192 It is important when measuring interest as the increase in value of a security between the date it is purchased and the date it matures (or is subsequently sold) to measure from one mid-point value to another and to treat the differences between mid-point price and bid or ask price at the time of purchase, sale or redemption as a service margin. Ignoring the margins understates the value of output of financial corporations and may understate interest payments also.

7.193 Equities and investment fund shares or units give rise to property income other than interest but, like debt securities, they are offered for sale and purchase at different prices. The difference between the buying price and mid-price and the mid-price and selling price should be treated as the provision of financial services as in the case of securities. The same principles as for securities apply for the same reason.

7.194 Although no property income flows are involved, margins between buying and selling prices also apply to purchases of foreign currencies (including transactions denominated in foreign currencies such as payments for imports and exports as well as the acquisition of physical notes and coins of a foreign currency). Again these margins should be treated as the provision of financial services in a manner similar to that described for securities.

7.195 Factoring is a transaction in which a financial company (factor, which can be a bank or other financial corporation, or a specialised unit offering factoring services) buys trade credits receivable from a supplier at a discount. The discount is equal to the difference between the nominal value of the accounts receivable and the actual payments by the factor to the supplier, and may consist of three elements: (i) fees; (ii) interest; and (iii) compensation for possible credit defaults. From a conceptual perspective, the output of the factor is represented by the first element only. In practice, however, details about the three elements may not be separately available. The difference between the nominal value of the accounts receivable and the actual payments by the factor may then be considered as a good approximation of output, under the condition that the factoring services are basically

restricted to short term financing arrangements with low amounts of (implicit) interest, including credit default risks. However, in situations in which the factor receives a relatively high compensation for risk-free interest (for example, due to conditions of high inflation) and/or possible credit defaults, this convention could lead to unacceptable high amounts of output for the factor and should preferably not be applied. In such cases, compilers should seek to estimate a value for risk-free interest and/or credit default risk to be deducted from the value of output, or alternatively, compilers may consider estimating output by the sum of costs. Furthermore, when separating out an element of interest, no implicit financial services on loans and deposits should be estimated. The main reason for this view is that factoring is quite different from the more traditional type of intermediating funds, which commonly refers to the intermediation between depositors and borrowers, thereby explicitly excluding claims like other accounts receivable/payable. This line of reasoning also applies, even though in the case of factoring the accounts receivable are to be reclassified to loans.

9. Financial services associated with insurance and pension schemes.

7.196 Five types of activities are covered under this heading: non-life insurance; life insurance and annuities; reinsurance; social insurance schemes; standardized guarantee schemes.

7.197 All these schemes lead to redistribution of funds, which are recorded in either the transfer income account or the financial account. For non-life insurance and standardized guarantee schemes, most of the redistribution takes place between different units in the same period. Many client units pay relatively small policy premiums or fees and a small number of them receive relatively large claims or payments. For life insurance, annuities and pension schemes, the redistribution is primarily, though not entirely, between different periods for a single client. In fulfilling their responsibilities as managers of these funds, insurance companies and pension funds are involved in both risk management and liquidity transformation, the prime functions of financial corporations.

7.198 Non-life insurance provides cover to the policyholder against loss or damage suffered as a result of an accident. A premium is paid to the insurance corporation and a claim is paid to the policyholder only if the event insured against occurs. If the event occurs then the maximum amount to be paid is specified in the policy so that the uncertainty concerns whether a payment will take place, not the amount of it.

7.199 Under a life insurance policy, many small payments are made over a period of time and either a single lump sum or a stream of payments is made at some pre-agreed time in the future. There is little conditionality involved in life insurance, usually the fact that a payment will be made is certain but the amount may be uncertain.

7.200 Annuities are offered by insurance corporations and are a means for an individual person to convert a lump sum into a stream of payments in the future.

7.201 Just as an individual may limit their exposure to risk by taking out an insurance policy, so may insurance corporations themselves. Insurance between one insurance corporation and another is called reinsurance. (Insurance other than reinsurance is called direct insurance.) Many reinsurance transactions are with specialized institutions in a few international financial centres. Reinsurers may also take out a further reinsurance policy. This practice is known as “retrocession”.

7.202 A social insurance scheme is one where a third party, usually an employer or the government, encourages or obliges individuals to participate in a scheme to provide benefits for a number of identified circumstances, including pensions in retirement. Social insurance schemes have much in common with direct insurance and may be run by insurance corporations. This is not necessarily the case, however, and there are special variations in how the payment of contributions (corresponding to premiums in the case of direct insurance) and benefits are recorded.

7.203 In some circumstances a unit, possibly but not necessarily within general government, may offer very many guarantees of very similar nature. One example is export guarantees and another is student loans. Because the guarantees are very similar and numerous, it is possible to make robust statistical estimates of the number of defaults the guarantor will have to cover and so these also are treated in a manner similar to direct non-life insurance.

7.204 The detailed recording for each of these activities, including the measurement of output, the recording of flows between the insurance corporations or pension funds, including employers operating non-autonomous social insurance schemes, on the one hand and policyholders or beneficiaries on the other, as well as flows between

social insurance schemes and managers/sponsors of such schemes, and the implications for changes in the balance sheets of the relevant institutional units are described in chapter 24 on Insurance and pensions. What follows is a summary of the key features of measuring output for the various activities listed above.

Non-life insurance

7.205 Under a non-life insurance policy, the insurance company accepts a premium from a client and holds it until a claim is made or the period of the insurance expires. In the meantime, the insurance company invests the premium and the property income is an extra source of funds from which to meet any claim due. The property income represents income foregone by the client and so is treated as an implicit supplement to the actual premium. The insurance company sets the level of the actual premiums to be such that the sum of the actual premiums plus the property income earned on them less the expected claim will leave a margin that the insurance company can retain; this margin represents the output of the insurance company. Within the integrated framework of the SNA, the output of the insurance industry is determined in a manner intended to mimic the premium setting policies of the insurance corporations.

7.206 The basic method for measuring non-life insurance output is the following:

Actual non-life insurance premiums earned

plus non-life insurance premium supplements

minus adjusted non-life insurance claims incurred.

7.207 ***The actual non-life insurance premiums are defined as the amount payable to the direct insurer or reinsurer to secure insurance cover for a specific event over a stated time period***. Cover is frequently provided for one year at a time with the premium due to be paid at the outset, though cover may be provided for shorter (or longer) periods and the premium may be payable in instalments, for example monthly.

7.208 ***The actual non-life insurance premiums earned are defined as the part of the actual premiums that relates to insurance cover provided in the accounting period.*** For example, if an annual policy with a premium of 120 units comes into force on April 1 and accounts are being prepared for a calendar year, the premium earned in the calendar year is 90. ***The unearned actual non-life insurance premiums are defined as the part of the actual premiums that relates to insurance cover provided in the period past the accounting point***. In the example just given, at the end of the accounting period there will be an unearned actual premium of 30, intended to provide cover for the first three months of the next year. ***Non-life insurance claims (D72) are the amounts payable in settlement of injuries or damages that result from an event covered by the non-life insurance (or reinsurance) policy occurring in the period for which the policy is valid. In the case of major catastrophic events, some proportion of the claims may be recorded as capital transfers.*** Insurance claims normally become due when the event occurs, even if the payment is made some time later. Claims that become due are described as claims incurred. In some contested cases the delay between the occurrence of the event giving rise to the claim and the settlement of the claim may be several years. ***Non-life insurance claims outstanding cover claims related to non-life insurance (or reinsurance), which have not yet been reported, have been reported but not yet settled, or have been both reported and settled but not yet paid.***

7.209 The insurance corporation has at its disposal reserves consisting of unearned actual premiums and claims outstanding. These reserves are called technical reserves and are used by the insurance company to generate investment income. Because the technical reserves are a liability of the insurance corporation to the policyholders, the investment income they generate is treated as being attributed to the policyholders. However, the amounts remain with the insurance corporation and are in effect a hidden supplement to the apparent actual premium. This income is therefore treated as a premium supplement paid by the policyholder to the insurance corporation.

7.210 In setting the level of actual premiums, which obviously the insurance corporation must do ex ante, it makes an estimate of the level of claims it expects to be faced with. Within the integrated framework of national accounts there are two ways in which the appropriate level of claims (described as adjusted claims) can be determined. One is an ex ante method, described as the expectation method, and estimates the level of adjusted claims from a model based on the past pattern of claims payable by the corporation. The other means of deriving adjusted claims is to use accounting information. Within the accounts for the insurance corporations there is an item called "equalization provisions" that gives a guide to the funds the insurance corporation sets aside to meet unexpectedly

large claims. Adjusted claims are derived ex post as actual claims incurred plus the change in equalization provisions. In circumstances where the equalization provisions are insufficient to bring adjusted claims back to a normal level, some contribution from own funds must be added also.

7.211 On occasion, the levels of technical reserves and of equalization provisions may be altered in response to financial regulation and not because of changes in the expected patterns of premiums and claims. Such changes should be recorded in the other changes in the volume of assets and liabilities account and excluded from the formula to determine output.

7.212 In circumstances where information is not available for either approach to deriving adjusted claims, it may be necessary to estimate output instead by the sum of costs including an allowance for normal profits.

Life insurance

7.213 A life insurance policy is a sort of saving scheme. For a number of years, the policyholder pays premiums to the insurance corporation against a promise of benefits at some future date. These benefits may be expressed in terms of a formula related to the actual premiums paid or may be dependent on the level of success the insurance corporation has in investing the funds.

7.214 The insurance corporation cumulates actual premiums paid until the promised date when benefits become payable and in the meantime uses the reserves to produce investment income and holding gains. Some of the investment income and holding gains is added to the life insurance reserves belonging to the policyholders to meet benefits in future (i.e., the life insurance and annuity entitlements). This allocation is an asset of the policyholders but is retained by the insurance corporation which continues to invest the amounts until benefits become payable. The remainder of the investment income and holding gains not allocated to the policyholders is retained by the insurance corporation as its fee for the service they provide.

7.215 The method of calculating output for life insurance follows the same general principles as for non-life insurance but because of the time interval between when actual premiums are received and when benefits are paid, special allowances must be made for changes in the life insurance and annuity entitlements.

7.216 The output of life insurance is derived as:

Actual life insurance premiums earned

plus life insurance premium supplements

minus life insurance benefits due

minus increases (plus decreases) in life insurance and annuity entitlements.

7.217 Premiums are defined in exactly the same way for life insurance as for non-life insurance.

7.218 Premium supplements are more significant for life insurance than for non-life insurance. They consist of all the income allocated to the life insurance policyholders as property income, whether or not this income originates from investment income or from holding gains (or losses). The amount involved is earnings foregone by the policyholders by putting the funds at the disposal of the insurance corporation and are thus recorded as property income in the allocation of earned income account.

7.219 Benefits are recorded as they are awarded or paid. There is no need under life insurance to derive an adjusted figure since there is not the same unexpected volatility in the payment due under a life policy. It is possible for the insurance corporation to make robust estimates of the benefits due to be paid even years in advance.

7.220 Life insurance and annuity entitlements increase each year because of new actual premiums paid, new investment income allocated to the policyholders (but not withdrawn by them) and decrease because of benefits paid. It is thus possible to express the level of output of life insurance as the difference between the total investment income and holding gains earned on the life insurance and annuity entitlements less the part of these returns actually allocated to the policyholders and added to the life insurance and annuity entitlements.

Reinsurance

7.221 The method of calculating the output of reinsurance is exactly the same as for non-life insurance, whether it is life or non-life policies that are being reinsured.

Social insurance schemes

7.222 There are different ways in which social insurance may be organized.

a. Some social insurance is provided by government under a social security scheme;

b. An employer may organize a social insurance scheme for its employees, either or not establishing a segregate fund to administer the scheme;

c. An employer may have an insurance corporation run the scheme for the employer in return for a fee;

d. An insurance corporation may offer to run a scheme for several employers (i.e., a multi-employer scheme) or an employer-independent scheme, in return for any property income and holding gains they may make in excess of what is owed to the participants in the scheme;

e. A separate institutional unit may be established to run a multi-employer schemes or an employer-independent scheme, either or not using services provided by insurance corporations.

The output for each of these modes of running a social insurance scheme is calculated in a different manner.

7.223 Social security schemes are run as part of the operation of general government. If separate units are distinguished, their output is determined in the same way as all non-market output as the sum of costs. If separate units are not distinguished, the output of social security is included with the output of the level of government at which it operates.

7.224 When an employer operates its own social insurance scheme, the value of the output is also determined as the sum of costs. Even if the employer establishes a segregated pension fund to manage the scheme, the value of output is still measured in the same way.

7.225 When an employer uses an insurance corporation to administer the scheme on his behalf, the value of the output is the fee charged by the insurance corporation.

7.226 For a multiemployer scheme or an employer-independent scheme, the value of output can often be measured as the sum of costs, or in the case the scheme is administered by an insurance corporation, the fees charged by the insurance corporation. However, in certain cases, the formula for life insurance policies may need to be applied. See chapter 24 on Insurance and pensions for more details on the recording of social insurance schemes.

Standardized guarantee schemes

7.227 If a standardized guarantee scheme operates as a market producer, the value of output is calculated in the same way as non-life insurance. If the scheme operates as a non-market producer, the value of output is calculated as the sum of costs.

10. Fiat currency and crypto assets

7.228 The creation of fiat currency, including crypto currency issued by governments and central banks, is implicitly recorded as output at the sum of costs of producing these financial assets.

7.229 Crypto assets without a corresponding liability designed to act as a medium of exchange are considered as non-produced non-financial assets. The miners solving cryptographic puzzles for validating the transactions in these assets on the blockchain, and (partly) receiving crypto assets in return, are considered to be producers of validation services, not as producers of the assets themselves. Their output should be measured as the sum of both explicit validation fees and implicit fees in the form of new crypto asset coins.

7.230 Most mineable crypto assets without a corresponding liability come into circulation via the work of miners that

solve cryptographic puzzles (proof-of-work) and validate transactions on the blockchain. The work of these "miners" in most cases requires the use of solutions developed using intellectual property in developing algorithmic solutions to the cryptographic puzzles, the use of specialized computing equipment, considerable amounts of energy to run and cool these machines, and a lot of time to solve the puzzles. Non-mineable crypto asset without a corresponding liability enter into circulation in two different ways. They may be released via an explicit sale and/or as payment to validators that validate transactions in different ways than via proof-of-work (e.g., via proof-of-stake or proof-of-authority). In the end, the designer of the overall framework choses the method in which new crypto assets enter into circulation (e.g., via explicit sales, proof-of-stake, proof-of-work, etc.).

7.231 The activities related to the emergence of new crypto assets without a corresponding liability are regarded as production activities, as the operation of miners and validators require the input of intermediate goods and services, labour and capital. The key difference between crypto asset without a corresponding liability generated through mining (proof-of-work) and other validation (e.g., proof-of-stake) processes is that the intermediate inputs associated with the validation process of non-mineable crypto assets are significantly less than those which are required by mineable crypto assets. The validation process does not always require specialized computing equipment and the level of energy required is generally less than in the mining processes.

7.232 The owners of existing crypto assets without a corresponding liability (i.e., coins that have already been brought into circulation) are considered to be the ones consuming the services provided by validators. These concern multiple institutional units that may be spread across a wide range of countries. These concern multiple institutional units that may be spread across a wide range of countries. They are the ones benefiting from the new crypto assets being brought into circulation and from the associated validation services. It ensures the increased use of the crypto assets and the chances of them being accepted as general medium of exchange, both adding to the serviceability of the existing crypto assets. The associated (imputed) financial payment would correspond to the dilution in the value of existing coins, which would be recorded as a transaction in the relevant crypto assets from the community of existing owners to the producers of the validation services.

7.233 More generally, similar treatments may be relevant in the case of validation services for crypto assets with a corresponding liability (and essentially for all transactions that take place on the Blockchain).

11. Research and development

7.234 Research and development is creative work undertaken on a systematic basis to increase the stock of knowledge, and use this stock of knowledge for the purpose of discovering or developing new products, including improved versions or qualities of existing products, or discovering or developing new or more efficient processes of production. Research and development is not an ancillary activity, and a separate establishment should be distinguished for it when possible. The research and development undertaken by market producers on their own behalf should, in principle, be valued on the basis of the estimated basic prices that would be paid if the research were subcontracted commercially, but in practice is likely to have to be valued on the basis of the total production costs incurred. Research and development undertaken by specialized commercial research laboratories or institutes is valued by receipts from sales, contracts, commissions, fees, etc. in the usual way. Research and development undertaken by government units, universities, non-profit research institutes, etc. is non-market production and is valued on the basis of the total production costs incurred. The activity of research and development is different from teaching and is classified separately in *ISIC*. In principle, the two activities ought to be distinguished from each other when undertaken within a university or other institute of higher education, although there may be considerable practical difficulties when the same staff divide their time between both activities. There may also be interaction between teaching and research which makes it difficult to separate them, even conceptually, in some cases. The treatment of R&D as capital formation is discussed in chapter 11 on Capital account.

12. The production of originals and copies

7.235 The production of books, recordings, films, software (including artificial intelligence), data and databases, tapes, disks, etc. is a two-stage process of which the first stage is the production of the original and the second stage the production and use of copies of the original. The output of the first stage is the original itself over which legal or

de facto ownership can be established by copyright, patent or secrecy. The value of the original depends on the actual or expected receipts from the sale or use of copies at the second stage, which have to cover the costs of the original as well as costs incurred at the second stage.

7.236 The output of the first stage is a fixed asset that belongs to the producer of the original (author, film company, program writer, etc.). It may be produced for sale or for own-account gross fixed capital formation by the original producer. As the asset may be sold to another institutional unit the owner of the asset at any given time need not be the original producer, although they are often one and the same unit. If the original is sold when it has been produced, the value of the output of the original producer is given by the price paid. If it is not sold, its value may be estimated on the basis of its production costs with a net return to capital used in production. However, the size of any net return must depend on the discounted value of the future receipts expected from using it in production, so that it is effectively this discounted value, however uncertain, that determines its value.

7.237 The owner of the asset may use it directly to produce copies in subsequent periods. The value of the copies made is also recorded as production separately from the production involved in the making of the original. Depreciation is recorded in respect of the use of the asset in the making of the copies the same way as for any other fixed asset used in production.

7.238 The owner may also license other producers to make use of the original in production. The latter may produce and sell copies, or use copies in other ways, for example, for film or music performances. The copier undertakes production in making the copies. Part of the cost of making the copies is the fee paid by the licensee to the owner or licensor. This fee represents both intermediate consumption of the licensee and output of the owner that is recorded as a service sold to the licensee. The payments made for the licences may be described in various ways, such as fees, commissions or royalties, but however they are described they are treated as payments for services rendered by the owner.

7.239 In certain circumstances the licence to make copies may also be treated as an asset, distinct from the original. The conditions under which this applies and the consequences are discussed in greater detail in chapter 11 on Capital account and chapter 27 on Contracts, leases, licenses and permits.

G. Intermediate consumption

1. Coverage of intermediate consumption

7.240 ***Intermediate consumption (P2) consists of the value of the goods and services consumed as inputs by a process of production, excluding fixed assets whose consumption is recorded as depreciation***. The goods or services may be either transformed or used up by the production process. Some inputs re-emerge after having been transformed and incorporated into the outputs, for example, grain may be transformed into flour which in turn may be transformed into bread. Other inputs are completely consumed or used up, for example, electricity and most services.

7.241 Intermediate consumption does not include expenditures by enterprises on valuables consisting of works of art, precious metals and stones and articles of jewellery fashioned out of them. Valuables are assets acquired as stores of value: they are not used up in production and do not deteriorate physically over time. Expenditures on valuables are recorded in the capital account. Intermediate consumption also does not include costs incurred by the gradual using up of fixed assets owned by the enterprise: the decline in their value during the accounting period is recorded as depreciation. However, intermediate consumption does include the rentals paid on the use of fixed assets, whether equipment or buildings, that are leased from other institutional units under an operating lease, and also fees, commissions, royalties, etc., payable under licensing arrangements, as explained above.

7.242 Where ancillary services are not shown as the output of a separate establishment, intermediate consumption includes the value of all the goods or services used as inputs into ancillary activities such as purchasing, sales, marketing, accounting, data processing, transportation, storage, maintenance, security, etc. In this case, the goods and services consumed by these ancillary activities are not distinguished from those consumed by the principal (or secondary) activities of a producing establishment. When a unit provides only ancillary services, it continues to be shown as a separate unit as long as the necessary information is available. There is more discussion of the treatment of ancillary activities in chapter 6 on Enterprises, establishments and industries.

2. The timing and valuation of intermediate consumption

7.243 The intermediate consumption of a good or service is recorded at the time when the good or service enters the process of production, as distinct from the time it was acquired by the producer. In practice, establishments do not usually record the actual use of goods in production directly. Instead, they keep records of purchases of materials and supplies intended to be used as inputs and also of any changes in the amounts of such goods held in inventories. An estimate of intermediate consumption during a given accounting period can then be derived by subtracting the value of changes in inventories of materials and supplies from the value of purchases made. Changes in inventories of materials and supplies are equal to entries less withdrawals and recurrent losses on goods held in inventories. Thus, by reducing the value of changes in inventories, recurrent losses increase intermediate consumption. Even if they are consistently large, as long as they occur regularly, losses are treated as increasing intermediate consumption. Goods entering and leaving inventories are valued at the purchasers' prices prevailing at the times the entries, withdrawals or recurrent losses take place. This is exactly the same method as that used to value changes in inventories of goods produced as outputs from the production process. Thus, the earlier discussion of the properties and behaviour of the PIM applies to inventories of inputs.

7.244 A good or service consumed as an intermediate input is normally valued at the purchaser's price prevailing at the time it enters the process of production; that is, at the price the producer would have to pay to replace it at the time it is used. As explained in more detail in section C, the purchaser's price can be regarded as being composed of three elements:

a. The basic price received by the producer of the good or service;

b. Any transportation costs paid separately by the purchaser in taking delivery of a good at the required time and location plus the cumulative distribution margin on a good that passes through the chain of wholesale or retail distribution;

c. Any non-deductible tax on the product payable on the good or service when it was produced or while in transit to the purchaser less any subsidy on the product.

For purposes of the input-output tables, it may be necessary to distinguish all three elements but this is not necessary in the accounts for institutional sectors or the supply and use table.

7.245 Intermediate inputs treated as being acquired from other establishments belonging to the same enterprise should be valued at the same prices as used to value them as outputs of those establishments plus any additional transport charges not included in the output values.

7.246 When goods or services produced within the same establishment are fed back as inputs into the production within the same establishment, they are only recorded as part of the intermediate consumption if they have been recorded as part of the output of that establishment. There is discussion on when this might be appropriate in section E. Deliveries of goods and services between different establishments belonging to the same enterprise are recorded as outputs by the producing establishments and intermediate inputs by the receiving establishments only when the receiving establishment effectively assumes all risks for completing the production process.

3. The boundary between intermediate consumption and remuneration of employees

7.247 Certain goods and services used by enterprises do not enter directly into the process of production itself but are consumed by employees working on that process. In such cases it is necessary to decide whether the goods and services are intermediate consumption or, alternatively, remuneration in kind of employees. In general, when the goods or services are used by employees in their own time and at their own discretion for the direct satisfaction of their needs or wants, they constitute remuneration in kind. However, when employees are obliged to use the goods or services in order to enable them to carry out their work, they constitute intermediate consumption.

7.248 It is immaterial to the employer whether they are treated as intermediate consumption or remuneration of employees because they are both costs from the employer's viewpoint and the operating surplus is the same. However, reclassifying such goods and services from remuneration in kind to intermediate consumption, or vice versa, changes value added and balance of earned incomes, and hence GDP as a whole.

7.249 The following types of goods and services provided to employees must be treated as part of intermediate consumption:

a. Tools or equipment used exclusively, or mainly, at work;

b. Clothing or footwear of a kind that ordinary consumers do not choose to purchase or wear and which are worn exclusively, or mainly, at work; for example, protective clothing, overalls or uniforms;

c. Accommodation services at the place of work of a kind that cannot be used by the households to which the employees belong: barracks, cabins, dormitories, huts, etc.;

d. Special meals or drinks necessitated by exceptional working conditions, or meals or drinks provided to servicemen or others while on active duty;

e. Transportation and hotel services including allowances for meals provided while the employee is travelling on business;

f. Changing facilities, washrooms, showers, baths, etc. necessitated by the nature of the work;

g. First aid facilities, medical examinations or other health checks required because of the nature of the work.

Employees may sometimes be responsible for purchasing the kinds of goods or services listed above and be subsequently reimbursed in cash by the employer. Such cash reimbursements must be treated as intermediate expenditures by the employer and not as part of the employee's wages and salaries.

7.250 The provision of other kinds of goods and services, such as ordinary housing services, the services of vehicles or other durable consumer goods used extensively away from work, transportation to and from work, etc. should be treated as remuneration in kind, as explained more fully in chapter 8 on Earned income accounts.

4. The boundary between intermediate consumption and gross fixed capital formation

7.251 Intermediate consumption measures the value of goods and services that are transformed or entirely used up in the course of production during the accounting period. It does not cover the costs of using fixed assets owned by the enterprise nor expenditures on the acquisition of fixed assets. The boundary between these kinds of expenditures and intermediate consumption is explained in more detail below.

Small tools

7.252 Expenditures on durable producer goods that are small, inexpensive and used to perform relatively simple operations may be treated as intermediate consumption when such expenditures are made regularly and are very small compared with expenditures on machinery and equipment. Examples of such goods are hand tools such as saws, spades, knives, axes, hammers, screwdrivers, and so on. However, in countries where such tools account for a significant part of the stock of producers' durable goods, they may be treated as fixed assets.

Maintenance and repairs

7.253 The distinction between maintenance and repairs and gross fixed capital formation is not clear-cut. The ordinary, regular maintenance and repair of a fixed asset used in production constitute intermediate consumption. Ordinary maintenance and repair, including the replacement of defective parts, are typical ancillary activities but such services may also be provided by a separate establishment within the same enterprise or purchased from other enterprises.

7.254 The practical problem is to distinguish ordinary maintenance and repairs from major renovations, reconstructions or enlargements that go considerably beyond what is required simply to keep the fixed assets in good working order. Major renovations, reconstructions, or enlargements of existing fixed assets, may enhance their efficiency or capacity or prolong their expected working lives. They must be treated as gross fixed capital formation as they add to the stock of fixed assets in existence.

7.255 Ordinary maintenance and repairs are distinguished by two features:

a. They are activities that owners or users of fixed assets are obliged to undertake periodically in order to

be able to utilize such assets over their expected service lives. They are current costs that cannot be avoided if the fixed assets are to continue to be used. The owner or user cannot afford to neglect maintenance and repairs as the expected service life may be drastically shortened otherwise;

b. Maintenance and repairs do not change the fixed asset or its performance, but simply maintain it in good working order or restore it to its previous condition in the event of a breakdown. Defective parts are replaced by new parts of the same kind without changing the basic nature of the fixed asset.

7.256 On the other hand, major renovations or enlargements to fixed assets are distinguished by the following features:

a. The decision to renovate, reconstruct or enlarge a fixed asset is a deliberate investment decision that may be undertaken at any time and is not dictated by the condition of the asset. Major renovations of ships, buildings or other structures are frequently undertaken well before the end of their normal service lives;

b. Major renovations or enlargements increase the performance or capacity of existing fixed assets or significantly extend their previously expected service lives. Enlarging or extending an existing building or structure obviously constitutes a major change in this sense, but a complete refitting or restructuring of the interior of a building, or ship, also qualifies.

Software, data and databases and research and development

7.257 Software, data and databases and research and development is treated as capital formation except in any cases where it is clear that the activity does not entail any future economic benefits for its owner in which case it is treated as intermediate consumption. Freely available research and development and other intellectual property products produced by general government and NPISHs which provide future economic benefits to society at large are also treated as fixed assets.

Mineral exploration and evaluation

7.258 Expenditures on mineral exploration and evaluation are not treated as intermediate consumption. Whether successful or not, they are needed to acquire new reserves and so are all classified as gross fixed capital formation.

Military equipment

7.259 Expenditures on military equipment, including large military weapons systems, are treated as fixed capital formation. Expenditure on durable military goods such as bombs, torpedoes and spare parts are recorded as inventories until used when they are recorded as intermediate consumption and a withdrawal from inventories.

5. Services provided by government to producers

7.260 Government may provide services to producers. To the extent that a charge is made for these services, the charges form part of the intermediate consumption of the producer. However, when the charge does not represent an economically significant price, the value of the service to the producer is greater than the cost. However, no estimation of this benefit is made and the costs of the services not covered by the charges made are included in collective consumption of government.

6. Social transfers in kind

7.261 Expenditures by government or NPISHs on goods or services produced by market producers that are provided directly to households, individually or collectively, without any further processing constitute final consumption expenditures by government or NPISHs and not intermediate consumption. The goods and services in question are treated as social transfers in kind and enter into the actual consumption of households.

7.262 Non-financial and financial corporations do not make social transfers in kind, nor engage in final consumption,

with the exception of the central bank providing non-market services for the society as a whole.

7. Services of business associations

7.263 Non-profit institutions in the form of business associations that exist to protect the interests of their members and are financed by them are market producers. The subscriptions paid by the businesses constitute payments for services rendered. These services are consumed as intermediate inputs by the members of the association and are valued by the amounts paid in subscriptions, contributions or dues.

8. Outsourcing

7.264 It is increasingly common for producers to change the way in which a production activity is completed. Different stages in the process or different support activities such as office cleaning or assembly of electronic components may be contracted out to another producer, in the same country or abroad. This changes the pattern of intermediate inputs even though the underlying technology may be the same. The impact of this on input-output tables is discussed in chapter 15 on Supply and use tables and chapter 36 on Input-output tables.

9. Leasing fixed assets

7.265 The decision to rent buildings, machinery or equipment under an operating lease, rather than purchase them, can have a major impact on the ratio of intermediate consumption to value added and the distribution of value added between producers. Rentals paid on buildings or on machinery or equipment under an operating lease constitute purchases of services that are recorded as intermediate consumption. However, if an enterprise owns its buildings, machinery and equipment, most of the costs associated with their use are not recorded under intermediate consumption. The depreciation on the assets forms part of gross value added while interest costs, both actual and implicit, have to be met out of the net operating surplus. Only the costs of the materials needed for maintenance and repairs appear under intermediate consumption. Decisions to rent rather than purchase may be influenced by factors quite unrelated to the technology of production, such as taxation, the availability of finance, or the consequences for the balance sheet.

7.266 There is a significant difference between rentals of fixed assets under an operating lease and the acquisition of an asset under a financial lease. Under an operating lease, the lessor has a productive activity that involves the equipment in question and is responsible for the production risks associated with the operational status of the asset. Payments by the lessee are treated as payments for a service. Under a financial lease, the lessee accepts all risks and rewards associated with the use of the asset in production. A financial lease is thus treated as a loan by the lessor to the lessee and purchase of the equipment by the lessee. Subsequent payments are treated as payments of interest and repayments of principal by the lessee to the lessor. Further details on the treatment of operating and financial leases are given in chapter 27 on Contracts, leases, licenses and permits.

H. Depreciation

1. The coverage of depreciation

7.267 ***Depreciation (P51d) is the decline, during the course of the accounting period, in the current value of the stock of fixed assets, including produced natural resources, owned and used by a producer as a result of physical deterioration, normal obsolescence or normal accidental damage.***

7.268 Depreciation is calculated for all fixed assets owned by producers, but not for valuables (precious metals, precious stones, etc.) that are acquired precisely because their value, in real terms, is not expected to decline over time. Fixed assets must have been produced as outputs from processes of production as defined in the integrated framework of the SNA. Depreciation does not, therefore, cover the depletion or degradation of non-produced natural resources such as land, mineral or other deposits, coal, oil, or natural gas, or contracts, leases and licences. It also does not cover the depletion or degradation of non-cultivated biological resources yielding once-only products. These declines in the value of non-produced assets are included in a separate category “depletion”,

which is discussed in the following section.

7.269 The value of produced assets may decline not merely because they deteriorate physically but also because of a decrease in the demand for their services as a result of technical progress and the appearance of new substitutes for them. In practice, many structures, including roads and railway tracks, are scrapped or demolished because they have become obsolete. Even though the estimated service lives may be very long for some structures, such as roads, bridges, dams, etc., they cannot be assumed to be infinite. Thus, depreciation needs to be calculated for all types of structures, including those owned and maintained by government units, as well as machinery and equipment.

7.270 Losses of fixed assets due to normal or expected levels of accidental damage are also included under depreciation; that is, damage caused to assets used in production resulting from their exposure to the risk of fires, storms, accidents due to human error, etc. When these kinds of accidents occur with predictable regularity they are taken into account in calculating the average service lives of the goods in question. For an individual unit, or group of units, any difference between the average and the actual normal accidental damage within a given period is recorded in the other changes in the volume of assets and liabilities account. However, at the level of the economy as a whole, the actual normal accidental damage within a given accounting period may be expected to be equal, or close, to the average.

7.271 On the other hand, losses due to war or to major natural disasters that occur very infrequently, such as major earthquakes, volcanic eruptions, flooding, tidal waves or exceptionally severe hurricanes, are not included under depreciation. There is no reason for such losses to be charged in the production account as costs of production. The values of the assets lost in these ways are recorded in the other changes in the volume of assets and liabilities account. Similarly, although depreciation includes reductions in the value of fixed assets resulting from normal, expected rates of obsolescence, it should not include losses due to unexpected technological developments that may significantly shorten the service lives of a group of existing fixed assets. Such losses are treated in the same way as losses due to above average rates of normal accidental damage.

2. Depreciation and rentals on fixed assets

7.272 It is possible to draw a comparison between depreciation and rental of assets under an operating lease. ***The rental is the amount payable by the user of a fixed asset to its owner, under an operating lease or similar contract, for the right to use that asset in production for a specified period of time.*** The rental needs to be large enough to cover (i) any direct costs incurred by the owner including the costs of maintaining the asset, (ii) the reduction in the value of the asset over that period (the depreciation) and (iii) the interest costs on the value of the asset at the start of the period. The interest costs may consist either of actual interest paid on borrowed funds or the loss of interest incurred as a result of investing own funds in the purchase of the fixed asset instead of a financial asset. Whether owned or rented, the full cost of using the fixed asset in production is measured by the actual or imputed rental on the asset and not by depreciation alone. When the asset is actually rented under an operating lease or similar contract, the rental is recorded under intermediate consumption as the purchase of a service produced by the lessor. When the user and the owner are one and the same unit, the direct costs are recorded as intermediate consumption. The depreciation represents the second element of the cost of using the asset. The third part of the cost, referred to above as the interest cost, is also known as the net return to capital. Like depreciation, the net return to capital is part of value added. The sum of the depreciation and the value of the net return to capital is known as the capital services rendered by the asset. Capital services are discussed in more detail in chapter 17 on Capital services.

7.273 The value of a fixed asset to its owner at any point of time is determined by the present value of the future capital services (that is, the sum of the values of the stream of future rentals less operating costs discounted to the present period) that can be expected over its remaining service life. Depreciation is measured by the decrease, between the beginning and the end of the current accounting period, in the present value of the remaining sequence of expected future capital services. The extent of the decrease will be influenced not only by the amount by which the efficiency of the asset may have declined during the current period but also by the shortening of its service life and the rate at which its economic efficiency declines over its remaining service life. The decrease is expressed in the average prices of the current period for an asset of exactly the same quality and should exclude holding gains and losses. When the flow of future economic benefits that determines the present values used to derive depreciation is expressed in terms of flows that include an element of inflation, then the discount factor should be

nominal. When the flows are expressed in terms of current period prices, then a real discount rate should be used. Either procedure results in a present value expressed in current period prices.

7.274 Depreciation is a forward-looking measure that is determined by future, and not past, events namely, the economic benefits that institutional units expect to derive in the future from using the asset in production over the remainder of its service life. Unlike depreciation as usually calculated in business accounts, depreciation is not, at least in principle, a method of allocating the costs of past expenditures on fixed assets over subsequent accounting periods. The value of a fixed asset at a given moment in time depends only on the remaining economic benefits to be derived from its use and depreciation must be based on values calculated in this way.

3. The calculation of depreciation

7.275 Fixed assets may have been purchased in the past at times when both relative prices and the general price level were very different from prices in the current period. In order to be consistent with the other entries in the same production account, depreciation must be valued with reference to the same overall set of current prices as that used to value output and intermediate consumption. Depreciation should reflect underlying resource costs and relative demands at the time the production takes place. It should therefore be calculated using the actual or estimated prices and rentals of fixed assets prevailing at that time and not at the times the goods were originally acquired. The "historic costs" of fixed assets, that is, the prices originally paid for them, become quite irrelevant for the calculation of depreciation as prices change over time.

7.276 For these reasons, depreciation as recorded in business accounts may not provide the right kind of information for the calculation of depreciation. If data on depreciation are used, they must, at the very least, be adjusted from historic costs to current prices. However, depreciation allowances for tax purposes have often been grossly manipulated in quite arbitrary ways to try to influence rates of investment and are best ignored altogether in many cases. It is recommended that independent estimates of depreciation should be compiled in conjunction with estimates of the capital stock. These can be built up from data on gross fixed capital formation in the past combined with estimates of the rates at which the efficiency of fixed assets decline over their service lives.

7.277 Whenever possible, the initial value of a new fixed asset should be that prevailing on the market when the asset is acquired. If assets of all ages and specifications were regularly traded on markets, these prices should be used to value every asset as it ages. However, there is scarce information on the prices of second-hand assets and faced with this lack, a more theoretical approach to determining the price of an asset as it ages must be adopted.

7.278 Conceptually, market forces should ensure that the purchaser's price of a new fixed asset is equivalent to the present value of the future economic benefits that can be derived from it. Given the initial exchange price, therefore, and knowledge of the characteristics of the asset in question, it is possible to project the stream of future economic benefits and continually update the remaining present value of these. This method of building up estimates of the capital stock and changes in the capital stock over time is known as the perpetual inventory method, or PIM. Estimates of depreciation are obtained as a by-product of the PIM.

4. The perpetual inventory method

7.279 A brief explanation of how depreciation may be calculated as a by-product of the perpetual inventory method of calculating the capital stock is given in this section. An overview of the link between the calculation of depreciation, the net return to capital and the stock of assets is given in chapter 17 on Capital services. Much more guidance on the way to calculate capital stock estimates appears in the *OECD Manual on Measuring Capital, 2nd edition (OECD, 2009).*

Calculation of the gross capital stock

7.280 The perpetual inventory method requires an estimate to be made of the stock of fixed assets in existence and in the hands of producers. The first step is to estimate how many of the fixed assets installed as a result of gross fixed capital formation undertaken in previous years have survived to the current period. Average service lives, or survival functions, based on observations or technical studies may be applied to past investments for this

purpose. Fixed assets purchased at different prices in the past have then to be revalued at the prices of the current period by utilizing appropriate price indices for fixed assets. The construction of suitable price indices covering long periods of time may raise conceptual and practical problems, but these technical problems of price measurement must be faced in any case in developing balance sheet values of assets. The stock of fixed assets surviving from past investment and revalued at the purchasers' prices of the current period is described as the gross capital stock. The gross capital stock can also be measured at the prices of a given base year if it is desired to have annual time series for the gross capital stock in volume terms.

Depreciation methods and efficiency profiles

7.281 The inputs into production obtained from the use of a given fixed asset tend to diminish over time. The rate at which the efficiency declines may vary from one type of asset to another. The simplest case to consider is one where the efficiency of the asset remains constant until it disintegrates, like a light bulb. Other simple cases include the case where the efficiency declines linearly or exponentially over its life. Other methods employ a hyperbolic rate of efficiency loss with relatively little decline in the initial years but increasingly steeper decline as time progresses. However, in practice calculations are not undertaken asset by asset individually but for cohorts of assets of similar ages and characteristics. Individual assets within the cohort will retire at different moments but the efficiency-retirement profile for the cohort as a whole is typically convex to the origin.

7.282 The efficiency profiles of fixed assets determine the profiles of the economic benefits they command over their service lives. Once the profiles of the economic benefits over the service lives of the fixed asset have been determined, it becomes possible to calculate the depreciation, period by period.

7.283 In general, it is recommended, as a default option, to use geometric depreciation method according to which a constant fraction of the capital stock is depreciated; however, other depreciation profiles may be considered more suitable for certain types of assets. Linear depreciation is not considered as a suitable method in most circumstances.

Rates of depreciation

7.284 Depreciation is derived as the reduction in the present value of the remaining economic benefits, as explained earlier. This reduction, and the rate at which it takes place over time, must be clearly distinguished from the decline in the efficiency of the capital assets themselves. Although the efficiency, and hence the economic benefit, of an asset with the efficiency characteristics of a light bulb may remain constant from period to period until it disintegrates, the value of the asset declines over time. It also follows that the depreciation is not constant. It can easily be shown in this case that the decline in the present value of the remaining economic benefits from period to period is considerably lower earlier in the life of the asset than when the asset is approaching the end of its life. Depreciation tends to increase as the asset gets older even though the efficiency and economic benefits remain constant to the end.

Values of depreciation

7.285 Depreciation should not be estimated in isolation from the derivation of a set of capital stock data. Such data are needed for the balance sheet and, as shown in chapter 17 on Capital services, trying to identify depreciation in isolation from the level of the stock of the asset and its patterns of price and efficiency decline is likely to be error prone.

I. Depletion

1. The coverage of depletion

7.286 ***Depletion (P8), in physical terms, represents the decrease in the quantity of the stock of a non-produced natural resource over an accounting period that is due to the extraction of the natural resource by economic units occurring at a level greater than that of its growth. In monetary terms, it corresponds with the decline in future***

economic benefits, due to extraction in excess of its growth, that can be earned from a resource, the value of which is based on the physical flows of depletion using the price of the natural resource in situ.

7.287 For non-renewable natural resources, such as mineral and energy resources, depletion, in physical terms, is equal to the quantity of resource that is extracted because the stock of these resources cannot regenerate on human time-scales. Increases in the stock of non-renewable natural resources (e.g., through discoveries) may permit the ongoing extraction of the resources. However, these increases in volume are not considered regeneration, and hence do not offset measures of depletion. The increases should be recorded as other changes in the volume of assets and liabilities.

7.288 For non-cultivated biological resources yielding once-only products, such as fish resources, the equality in physical terms between depletion and extraction does not hold. The ability for these resources to reproduce and grow naturally means that in certain management and extraction situations, the quantity of resources extracted may be matched by a quantity of resources that are reproduced and, in this situation, there is no overall physical depletion of the environmental asset. Only the amount of extraction that is above the level of growth is recorded as depletion; in the case the amount of extraction is below the level of growth(for example, to allow the resource to regenerate and thus allow higher future extraction), it is recorded as negative depletion. In the case of the underlying asset of cultivated biological resources yielding once-only products, such as forest land underlying the growth of trees for timber production, a similar treatment is applied.

7.289 Thus, in the estimation of depletion for biological resources yielding once-only products, it is necessary to consider both the extraction and the growth of these resources. While the rates of extraction can be observed directly, measurement of the rates of growth can be complex and usually requires consideration of biological models. These models will usually account for both the structure and the size of biological resource populations; and exhibited by their general form, when the stock or population of the specific type of resource is small, the rate of growth will be small but, as the population increases, the rate of growth will also increase. Eventually, as the population within a given area reaches the carrying capacity of the area, i.e., as the density reaches a maximum, the rate of growth in the population will slow substantially.

7.290 Based on this general model, for any given population, it is possible to calculate the number of animals or volume of plants by age or size class that may be removed from the population without affecting the capacity of the population to reproduce itself (i.e., opening stock equals closing stock). In effect, there is a "surplus" or excess that can be harvested from the existing stock. In biological models, this surplus is known as the sustainable yield. The level of the sustainable yield rises and falls in line with the overall size and structure of the population. For example, in populations where the growth rates are low, the sustainable yields are also low. It is noted that the same level of extraction will have a different relationship to the sustainable yield depending on the population size.

7.291 Although the measurement of depletion for biological resources yielding once-only products through the use of biophysical models can be looked upon as the conceptually preferred method, it is also considered a very advanced method, and it may not be possible to apply this method in practice. Instead, for example, in the case of timber, the net annual increment (i.e., the natural growth) based on forest inventories less the expected felling of trees may be used to estimate the future resource rents derived from forest land.

7.292 Land and renewable energy resources are generally not subject to depletion. However, in a number of cases, the value of land may be combined with other assets, as a consequence of which the total value may be subject to either depletion (or depreciation). An example relates to forest land (see above).

7.293 Depletion is not recorded when there is a reduction in the quantity of an environmental asset owing to unexpected events such as losses due to extreme weather or pandemic outbreaks of disease. These reductions are recorded as catastrophic losses (i.e., other changes in the volume of assets and liabilities), whereas depletion is the consequence of the extraction of natural resources by economic units.

7.294 Depletion is also measured in monetary terms, by valuing the physical flows of depletion using the price of the natural resource in situ. The monetary value of depletion is equal to the change in the value of the natural resource that is due to physical depletion. The next subsection explains how this can be calculated.

7.295 The decrease in value of non-produced non-financial assets other than non-produced natural resources, by using these assets in production, is not recorded as part of depletion, but as an other change in the volume of assets. The consideration of a possible alternative treatment, e.g., as a cost of production similar to depletion, is put on the

2025 SNA Research Agenda.

2. The calculation of depletion

7.296 For the compilation of monetary estimates for the depletion of non-renewable mineral and energy resources, it is necessary to decompose the present value of future resource rents into a quantity component and a price component. The relevant quantity is the quantity of the resource which is expected to be extracted in the course of the life of the asset. This quantity is the same as that used for the valuation of the asset. The implicit price of the asset can then be derived by dividing the monetary value of the asset by this quantity indicator, and basically represents a discounted series of future resource rents per unit. The monetary value of depletion can then be calculated by multiplying the resources extracted during a year with the average price of the asset at the beginning and the end of the year.

7.297 For the estimation of depletion for biological resources yielding once-only products, a similar procedure as the one for non-renewable mineral and energy resources can be followed, albeit that in the case of biological resources depletion may be positive or negative, depending on whether or not the extraction of the resources is higher or lower than (net) natural growth.

7.298 More extensive information on the estimation of depletion in physical and monetary terms can be found in the *SEEA Central Framework*, in particular chapter 5 (section 5.4.2 and Annex A5.1).

Annex to chapter 7: Separating output due to storage from holding gains and losses

A. Introduction

7A.1 Paragraphs 7.157 to 7.160 recommend that, in some cases, the increase in value of goods held in inventories may be regarded as output due to storage rather than to holding gains. This annex explores the topic further and gives examples of when it is appropriate to treat any of the increase in value of a product as due to production and how this may be separated from any remaining holding gains and losses.

1. Storage costs and holding gains and losses

7A.2 Holding products in inventories always involves costs whether they are being held by the original producer or a subsequent wholesaler or retailer. These costs include those associated with providing the physical storage capacity, maintaining information on levels and types of inventories, costs of supplying withdrawals to customers and costs associated with renewing the level of inventories by acquiring replacement goods (other than the cost of the goods themselves). These costs form part of the basic price charged by a manufacturer or are recovered in the margins charged by wholesalers and retailers. The costs incurred are included in intermediate consumption, remuneration of employees and the cost of capital. It may also be the case that specialist storage producers provide a service to other producers and again their costs are included in intermediate consumption.

7A.3 For most products, called "type I" products, this is the only aspect of storage that is relevant. All the costs associated with storage are included in production costs. The value of the goods as they are withdrawn from inventories is valued at the costs of producing or acquiring replacement items at that time. As a consequence, output is measured excluding any change in the value of products held in inventories; this change in value is treated as a holding gain or loss, as illustrated in the following example.

7A.4 Suppose a wholesaler buys and sells 100 packets of washing powder every period and in order to allow for marginal variations in demand keeps an inventory of 10 packets. At the beginning of a period the price paid per packet is 2, so the value of his inventories is 20. During the period the acquisition cost per packet increases to 2.1. The value of the 10 packets in inventories rises to 21 but the increase in value of 1 reflects the fact only that if the 10 packets were withdrawn from inventories for sale and replaced by identical products, the new products would cost 21 to acquire. Because output is measured with all goods, whether newly produced or withdrawn from inventories, valued at the new price of 2.1, the 1 increase in the value of inventories does not enter the measures of production but appears only in the revaluation account explaining how the value of a stock of 10 packets at the beginning of the period, valued at 20, is replaced by a similar stock of 10 packets at the end of the period now valued at 21.

B. Goods whose real value changes over time

7A.5 There are three specific cases where the treatment described above is unsatisfactory because other factors intervene in the time while the goods are held in storage. Goods where this is the case are described as "type II" products. The three specific circumstances are the following:

a. Goods that have a very long production process;

b. Goods that change their physical characteristics while in inventories;

c. Goods that have seasonal patterns of supply or demand but not both.

Each of these is discussed in turn below.

1. Goods with a long production period

7A.6 When a product is held in inventories for an extended period of time because of the length of the production process, in principle, discount factors should be used when calculating the value of work put in place each period before the delivery date. For example, if a construction project ultimately worth 200 is put in place steadily over four years, it is unrealistic to count 50 as the contribution to production in the first year. Any purchaser would take account of the fact that he would not be able to realise the value of this production for another three years and discount the value accordingly. As time passes, there is income arising to the unit holding the assets as the unwinding of the assets using the discount factor. This case is described in chapter 17 on Contracts, leases, licenses and permits, with the full details of this numerical example.

7A.7 It is suggested that in practice it is necessary to make an allowance for the discount factor only for goods of a significantly high value and significantly long production process, where goods are recorded as work-in-progress for many periods before completion.

2. Goods whose physical characteristics change

7A.8 The second set of circumstances relates to goods whose physical characteristics change during storage because maturing is part of the production process. The goods concerned are those that in the absence of any general or relative change in prices still increase in value because they improve in quality over the time held in storage. Examples are fermentation affecting food products and the ageing of wine and spirits. When the product is withdrawn from storage, it is physically different from a new item entering the maturing phase and so it is not appropriate to use the acquisition cost of the new entry into inventories as the value of the product being withdrawn. The question is how to separate the increase in value due to maturing from the overall price increases of the goods concerned.

7A.9 Suppose a product takes three years to reach a sufficient maturity to be sold and there is final demand for the product until it reaches this state. If the good is traded, even in its immature state, then prices will exist for the immature, newly manufactured product, for the one year old product, the two year old product and the mature product. Supposing the product is well-established, at any point in time there will be a mix of newly manufactured items and those of maturities of one, two and three years. If prices exist for these different maturities, separating the value of storage is not difficult. In the first year the new product is transformed into a product of one year's maturity. If the price when the product is brand new is P0 and when it is one year old is P1, and t is the first year and t+1 the second, the change in value of a quantity Q of the product is Q(P1,t+1 – P0,t). The increase in value is due to two factors, the increase in the price of the new product made last year to the price of a similar new product made this year (Q(P0,t+1 – P0,t)) and the difference between the price of a similar new product made this year and the price of the one year mature product this year (Q(P1,t+1 – P0,t+1)). By applying the price differences to the volumes involved, the first difference gives rise to a holding gain; the second to the value of output due to storage.

7A.10 The identity that:

> the increase in value from period t to period t+1 =
>
> the change in value between products of the same maturity (or vintage) from period t to period t+1 (treated as a holding gain)
>
> *plus* the change in value between products of successive maturities (or vintages) in period t+1 treated as the output due to storage,

is true for any two successive time periods. Thus, in the second year the increase in price between the one year mature product at the beginning of the year and the price of a one year mature product at the end of the year gives rise to a holding gain and the difference in price between a one year mature product at the end of the year and the two year mature product at the same time gives the value of output due to storage, and so on.

7A.11 The identity in paragraph 7A.10 holds in current values, when each term contains (or consists of) nominal holding gains (or losses) or when each term is deflated by the general level of inflation so that each term contains or consists of real holding gains (or losses). In volume terms, as when there are no price increases, the increase in value is identified with the output due to storage.

7A.12 In practice it is very likely that robust time series of prices at different points in the maturing process do not exist. It is possible that some close equivalent might be available but even this is not very likely. How can storage be separated from holding gains in the absence of these prices?

7A.13 From long experience the producer may be able to make a reasonable prediction about the increase in value due to storage. Suppose in a particular case he expects the value in volume terms after three years to be two and a half times the cost of producing the new product. If the new product is worth 100, the three year old, mature, product is worth 250. This suggests that the volume of output due to storage is 50 in each of the next three years. (Like the long construction product discussed above, in principle, a discount factor should be applied to the initial 100 and the first two tranches of 50 because the product is not ready for sale until the end of the third year.) In the absence of information about the increase in the price of the product relative to the general increase in prices, it may be necessary to assume there are no real holding gains in the product and the actual increase in value must be taken as the value of the output due to storage in current values. Once the price of the fully mature product is known, some adjustment could be made or, pragmatically, the difference between the original prediction and the outturn, adjusted for general inflation, may be taken as a real holding gain or loss.

7A.14 It is not ideal that the output due to storage is assumed to be invariant to fluctuations in relative prices, but in circumstances where most of the price increase will be due to storage and better basic data are not available, this approach gives a pragmatic estimate of output due to storage that is superior to the assumption that the whole of the increase in value is simply a holding gain.

3. Goods with seasonal patterns of supply and demand

7A.15 The third case where there is a change in value that is not attributable solely to holding gains and losses is when goods are placed in storage to take advantage of changes in the pattern of supply and demand over a year. The most common case is storage of a staple crop, such as maize, where there is a relatively short harvest period but demand is fairly constant throughout the year. As a result, the price rises as inventories decrease until the next harvest when an increase in supply causes the price to fall again. It is possible to envisage the opposite case where demand is seasonal but it is cost effective for producers to produce the good for the whole, or most, of the year, even though for much of that time the production goes straight into inventories and stays there until demand peaks.

7A.16 The reason that this type of product is different from a type I product is that, as with the goods that change characteristics due to maturing, the price increases, relative to the general level of inflation, in a more or less predictable way because of the effect of transporting the goods through time, from a period of abundance to one of relative scarcity. This is a quite different motivation from holding items in store for purely speculative reasons when there is no pattern established for the probable increase in prices and no predetermined time over which the goods might be held.

7A.17 The ideal situation is one where there is a well-established and robust seasonal pattern for the expected price increases in the crop. In such a case, the seasonal pattern of the prices can be used to establish the output due to storage and the remaining increase in value represents holding gains and losses that can be separated into real and neutral elements as normal.

7A.18 However, given that the total level of a harvest can be quite different year on year and the actual time of harvest may vary slightly from year to year depending on climatic conditions, establishing a robust seasonal pattern of prices may not be easy. In such a case, the pragmatic suggestion is similar to that for maturing goods when there is imperfect information. The premise is that the increase in price will be attributable to two factors; the first is an increase matching the general increase in prices. The element of increase in the value of inventories corresponding to this should be treated as nominal holding gains and losses. The second factor leading to the increase in prices is a seasonal scarcity value and this element should be treated as giving rise to output due to storage. Assuming that all the increase other than that matching average price increases is due to storage implies that there are no real holding gains.

4. Who benefits from the increase in value of goods in storage?

7A.19 The fact that type II products give rise to production of storage depends only on the type of product, not on the

producer. If a farmer produces a seasonal crop and then stores most of it to sell bit by bit throughout the year, he records the economic benefits of the increase in value due to storage in his output. However, if he sells all of his crop at harvest time to another unit (for example, a wholesaler) and that unit puts it in inventories and sells it continuously throughout the year, then that unit derives the economic benefits from holding the crop in storage and records in his output these economic benefits that would otherwise have been recorded by the farmer as output. However many times a type II good changes hands between its production and sale, the value of output due to storage will be the same. It is likely that every time it changes hands, the associated intermediate consumption will increase so that value added will decrease but the level of output will not be affected. Thus an increase in value accrues to the unit holding the goods, if they are type II goods and the holder is a wholesaler or retailer, he may have output just as the original producer may.

5. When is output due to storage recorded?

7A.20 Output due to storage is produced on a continuous basis. In order to have an articulated set of information on production and inventories, output from storage must be calculated period by period. If the goods that are changing value remain in inventories, the owner of the goods has output that is treated as an addition to inventories. Even though the quantity of the inventories may not change, the quality-adjusted measures do change to reflect the increase in price that is treated as a quality change and not as a holding gain.

Some examples

7A.21 These simple examples show how the approximate approach to calculating storage works under different assumptions.

Example 1

7A.22 Unit A purchases goods to the value of 100 and they rise in value to 110 by the middle of year 2 when he sells them. At the end of the year the value of the goods is 108. There is no general inflation in the period.

7A.23 In year 1, A records output of 8 and additions to inventories of 108 in total. In year 2, A records output of 2, additions to inventories of 2 and sales of the withdrawals from inventories of 110.

Example 2

7A.24 The goods bought in example 1 also increase in line with inflation so that they are worth 115 by the end of year 1 and 120 on disposal.

7A.25 The recordings in year 1 are complemented by holding gains of 7 in year 1. At the end of year 1, it is necessary to re-estimate the expected price level on disposal. If this is estimated to be 117, showing the same absolute increase as previously expected, for example, then a holding gain of 3 will be recorded in year 2.

Example 3

7A.26 The goods in example 1 are sold to unit B for 105 part way through the year. B then holds the goods until selling them at the same point in time in year 2 for 110.

7A.27 In year 1, A has output of 5 and acquisition of inventories of 105. A withdraws inventories of 105 and sells them to B. B has output in year 1 of 3, which is recorded as an addition to inventories. The value of B's total additions to inventories in year 1 is thus 108. In year 2, B has output of 2, additions to inventories of 2 and sales that represent withdrawals from inventories of 110.

Chapter 8: Earned income accounts

A. Introduction

8.1 There are two accounts that record how income arising from involvement in processes of production or from ownership of assets needed for production are distributed among institutional units and the second of these is further subdivided in two also:

a. The generation of earned income account;

b. The allocation of earned income account;

- The entrepreneurial income account; and
- The allocation of other earned income account.

8.2 Basic to all these accounts is the concept of earned income. Earned incomes are incomes that accrue to institutional units as a consequence of their involvement in processes of production or ownership of assets that may be needed for purposes of production. A major item of earned income is remuneration of employees that represents the income accruing to individuals in return for their labour input into production processes. Property income is that part of earned incomes that accrues by lending financial resources or renting non-produced natural resources and other non-produced non-financial assets, to other units for use in production. Receipts from taxes on production and imports (less subsidies on production and imports) are treated as earned incomes of governments even though not all of them may be recorded as payable out of the value added of enterprises. Earned incomes do not include the payments of social contributions to social insurance schemes and the receipt of benefits from them, current taxes on income, wealth, etc. and other current transfers, such current transfers being recorded in the income transfers other than social transfers in kind account.

1. The generation of earned income account

8.3 The generation of earned income account (shown in table 8.1) represents a further extension or elaboration of the production account in which the earned incomes accruing to government units and to the units participating directly in production are recorded. Like the production account, it may be compiled for establishments and industries as well as for institutional units and sectors. The generation of earned income account shows the sectors, subsectors or industries in which the earned incomes originate, as distinct from the sectors or subsectors destined to receive such incomes. For example, the only remuneration of employees recorded in the generation of earned income account for the household sector consists of the remuneration of employees payable by unincorporated enterprises owned by households. This item is very different from the remuneration of employees receivable by the household sector, which is recorded in the account below, the allocation of earned income account.

8.4 The revenues, listed on the right-hand side of the generation of earned income account, consist of only a single item, value added, the balancing item carried forward from the production account. As stated in chapter 7 on Production account, value added may be measured before the deduction of depreciation and depletion (gross) or after the deduction of depreciation and depletion (net). Provision must also be made throughout the remaining accounts of the sequence of economic accounts for the relevant balancing items to be measured gross or net of depreciation and depletion. The concept and measurement of depreciation and depletion have already been explained in detail in chapter 7. For simplicity, it will be assumed that value added is measured net, except when the context requires gross value added to be referred to explicitly.

8.5 The left-hand side of the generation of earned income account records the expenditures of value added. There are only two main types of charges that producers have to meet out of value added: remuneration of employees payable to workers employed in the production process and any taxes, less subsidies, on production payable or receivable as a result of engaging in production. ***Remuneration of employees (D1) is defined as the total remuneration, in cash or in kind, payable by an enterprise to an employee in return for work done by the latter during the accounting period. Taxes less subsidies on production consist of taxes payable or subsidies receivable on goods or services produced as outputs and other taxes or subsidies on production, such as those payable on the labour, machinery, buildings or other assets used in production***. Taxes on production do not

include any income taxes payable by the recipients of incomes accruing from production, whether employers or employees.

8.6 The content of the item taxes less subsidies on production payable out of value added varies according to the way in which output is valued. Value added tax (VAT), or other similar deductible tax, invoiced on output is never treated as part of the price receivable by the producer from the purchaser. Invoiced VAT is always omitted from value of output, whether output is valued at producers' or basic prices. Hence, invoiced VAT is not a charge against value added and is not recorded as a payable in the producer's generation of earned income account. However, when output is valued at producers' prices, any other tax on products payable on the output is treated as an integral part of the price receivable by the producer from the purchaser. The tax is recorded as being payable by the producer out of value added at producers' prices in the generation of earned income account, that is, as a component of the item "taxes less subsidies on production". Similarly, any subsidy on products receivable on the output is recorded as being receivable by the producer from government in the generation of earned income account as a supplement to value added at producers' prices. By convention, it is not recorded under revenues but as a component of "taxes less subsidies on production" as if it were a negative tax on output.

8.7 As explained in chapter 7, the basic price is obtained from the producer's price by deducting any tax on products payable on a unit of output (other than invoiced VAT already omitted from the producer's price) and adding any subsidy on products receivable on a unit of output. In consequence, no taxes on products or subsidies on products are to be recorded as (negative) payables in the producer's generation of earned income account when value added is measured at basic prices, the preferred valuation basis in the integrated framework of the SNA. When basic prices are used to value output, the item "taxes less subsidies on production" refers only to other taxes, less subsidies, on production.

8.8 After deducting remuneration of employees and taxes, less subsidies, on production from value added, the balancing item of the generation of earned income account is obtained. The balancing item is shown on the left-hand side of the account under expenditures. It measures the surplus or deficit accruing from production before taking account of any interest, rent or similar charges payable on financial assets or non-produced natural resources and other non-produced non-financial assets, borrowed or rented by the enterprise, or any interest, rent or similar receipts receivable on financial assets or non-produced non-financial assets, including non-produced natural resources, owned by the enterprise.

Operating surplus and mixed income

8.9 The balancing item is described as operating surplus except for unincorporated enterprises owned by households in which the owner(s) or members of the same household may contribute unpaid labour inputs of a similar kind to those that could be provided by paid employees. In the latter case, the balancing item is described as mixed income because it implicitly contains an element of remuneration for work done by the owner, or other members of the household, that cannot be separately identified from the return to the owner as entrepreneur. In many cases, though, the element of remuneration may dominate the value of mixed income. In practice, all unincorporated enterprises owned by households that are not quasi-corporations are deemed to have mixed income as their balancing item, except owner-occupiers in their capacity as producers of housing services for own final consumption, households leasing dwellings and households employing paid domestic staff. For owner-occupiers and those leasing dwellings, all value added is operating surplus. For domestic staff all value added is remuneration of employees (unless any taxes or subsidies on production are payable or receivable on the output).

8.10 As noted in chapter 7, gross domestic product (GDP) at market prices is equal to the sum of the gross value added of all resident enterprises plus those taxes, less subsidies, on products that are not payable on the values of the outputs of those enterprises, that is, taxes, less subsidies, on imports plus non-deductible VAT when output is valued at producers' prices, and all taxes, less subsidies, on products when output is valued at basic prices. For this reason, taxes, less subsidies, on imports and VAT must also be recorded under expenditures of GDP in the generation of earned income account for the total economy, even though they do not appear in the generation of earned income account for individual institutional units or sectors.

8.11 As already noted, the preferred measure of value added is after deducting depreciation and depletion, that is, net value added. However, provision is made in the accounts of the integrated framework of the SNA for value added, and all subsequent balancing items that depend on value added, to be measured gross or net of depreciation and

depletion. Operating surplus and mixed income may therefore both be expressed as gross or net.

8.12 Operating surplus or mixed income is a measure of the surplus accruing from processes of production before deducting any explicit or implicit interest charges, rent or other property incomes payable on the financial assets, non-produced natural resources or other non-produced non-financial assets, required to carry on the production. It is, therefore, invariant as to whether:

a. The non-produced non-financial assets, including non-produced natural resources, used in production are owned or rented by the enterprise; and

b. The inventories, fixed assets, non-produced non-financial assets, including non-produced natural resources, owned by the enterprise and used in production are financed out of own funds (or equity capital) or out of borrowed funds (or loan capital).

Table 8.1: The generation of earned income account - concise form – expenditures

Expenditures

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
D1	Remuneration of employees	986	44	98	11	11	1 150			1 150
D2	Taxes on production and imports						235			235
D3	Subsidies						- 44			- 44
B2g	Operating surplus, gross	292	46	39	84	6	467			467
B3g	Mixed income, gross				61		61			61
P51d1	Depreciation on gross operating surplus	157	12	27	15	3	214			214
P51d2	Depreciation on gross mixed income				8		8			8
P81	Depletion on gross operating surplus	30			0		30			30
P82	Depletion on gross mixed income				0		0			0
B2n	*Operating surplus, net*	105	34	12	69	3	223			223
B3n	*Mixed income, net*				53		53			53

Table 8.1 (cont): The generation of earned income account - concise form - revenues

Revenues

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
B1g	Value added, gross / Gross domestic product	1 331	94	138	155	18	1 869			1 869
B1n	*Value added, net / Net domestic product*	1 144	82	111	132	15	1 617			1 617
D1	Remuneration of employees									
D2	Taxes on production and imports									
D3	Subsidies									

8.13 Although operating surplus or mixed income is invariant to the extent to which non-produced non-financial assets, including non-produced natural resources, are owned or assets in general are financed, it needs to be sufficient to cover both any explicit, or implicit, rent on non-produced non-financial assets, including non-produced natural resources, and the explicit, or implicit, interest charges on the value of all the assets owned by the enterprise in order to justify their continued use in production. The implicit interest costs of using the enterprise's own funds to purchase inventories, fixed assets or other assets are the opportunity costs of using the funds in this way rather than to acquire financial assets on which investment income could be earned. These costs are captured in estimates of capital services. The amounts of rent and interest actually payable on rented non-produced non-financial assets, including non-produced natural resources, and borrowed funds are recorded in the allocation of earned income account and the entrepreneurial income account.

8.14 The operating surplus or mixed income of an individual producer unit is not invariant, however, to the extent to which the fixed assets used in production are owned or rented. When buildings, other structures, machinery or equipment are rented by an enterprise, the payments of rentals under an operating lease are recorded as purchases of services. These services form part of intermediate consumption. Thus, as explained in chapter 27 on Contracts, leases, licenses and permits, the payment of the rental on a fixed asset tends to reduce gross value added below what it would be if the producer owned the asset. The impact on net value added is mitigated by the fact that a tenant, or lessee, incurs no depreciation. However, even net value added will tend to be lower when a fixed asset is rented as the rental has to cover the lessor's operating and interest costs. At the level of the total economy, the lower surpluses accruing to tenants or lessees will tend to be counterbalanced by the operating surpluses earned by the lessors.

2. The allocation of earned income account

8.15 Whereas the generation of earned income account focuses on resident institutional units or sectors in their capacity as producers whose activities generate earned incomes, the allocation of earned income account (shown in table 8.2) focuses on resident institutional units or sectors in their capacity as recipients of earned incomes. The allocation of earned income account shows where the items payable in the generation of earned income account are receivable and also includes the amounts of property incomes receivable and payable by institutional units or

sectors. As already noted, the generation of earned income account, being related to production activities, can be compiled for establishments and industries as well as for institutional units and sectors. However, the allocation of earned income account has no such direct link with production and can only be compiled for institutional units and sectors.

8.16 Enterprises may invest surplus funds in financial assets or even non-produced natural resources and other non-produced non-financial assets, especially in times of uncertainty and high interest rates. Considerable property income may be received from such investments. The property income paid out by a corporation will be influenced by the amount of property income received as well as by its operating surplus. Thus, it is not appropriate to record all the property income paid out by an enterprise as if it were chargeable against operating surplus. Some interest costs, especially implicit costs, may be attributable to assets other than those used in production. For this reason, the explicit and implicit interest costs payable by an enterprise ought not to be recorded in the generation of earned income account in which the revenues consist only of value added accruing from production. They are recorded in the allocation of earned income account along with any property income receivable as well as the operating surplus.

Table 8.2:The allocation of earned income account - concise form – expenditures

Expenditures

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
D1	Remuneration of employees							6		6
D2	Taxes on production and imports									0
D3	Subsidies									0
D4	Property income	134	168	42	41	6	391	44		435
B5g	Balance of earned incomes, gross / National income, gross	248	27	216	1 381	7	1 879			1 879
B5n	Balance of earned income, net / National income, net	61	15	189	1 358	4	1 627			1 627

Table 8.2 (cont):The allocation of earned income account - concise form – revenues

Revenues

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
B2g	Operating surplus, gross	292	46	39	84	6	467			467
B3g	Mixed income, gross				61		61			61
B2n	*Operating surplus, net*	105	34	12	69	3	223			223
B3n	*Mixed income, net*				53		53			53
D1	Remuneration of employees				1 154		1 154	2		1 156
D2	Taxes on production and imports			235			235			235
D3	Subsidies			- 44			- 44			- 44
D4	Property income	72	149	46	123	7	397	38		435

8.17 There are two kinds of income listed under revenues on the right-hand side of the allocation of earned income account. The first shows where earned incomes already recorded in the generation of earned income account are receivable, as follows:

a. Remuneration of employees receivable by households or non-resident households;

b. Taxes, less subsidies, on production or imports receivable (or payable) by government units or a foreign government;

c. Operating surplus, or mixed income, of enterprises carried forward from the generation of earned income account.

The second kind of income consists of property incomes receivable from the ownership of financial assets or non-produced non-financial assets, including non-produced natural resources:

a. Investment income receivable by the owners of financial assets from either resident or non-resident units;

b. Rent receivable by owners of non-produced non-financial assets, including non-produced natural resources, leased to other units.

The balancing items and national income

8.18 The expenditures, listed on the left-hand side of the allocation of earned income account, consist only of the property incomes payable by institutional units or sectors to creditors, shareholders, landowners, etc. These may be payable to non-residents as well as residents. The remaining item recorded under expenditures is the balancing item, ***the balance of earned incomes (B5), defined as the total value of the earned incomes receivable by an institutional unit or sector less the total of the earned incomes payable***. At the level of the total economy it is described as national income.

8.19 The composition of the balance of earned incomes varies considerably from one sector to another as certain types of earned incomes are receivable by certain sectors only or by non-residents. In particular, taxes are received only by the general government sector and non-residents, while remuneration of employees is received only by the household sector and non-residents. These balances are described below.

a. The balance of earned incomes of the non-financial and financial corporations sectors consists only of operating surplus plus property income receivable less property income payable.

b. The balance of earned incomes of the general government sector consists of taxes on production and on imports receivable less subsidies on production payable, plus property income receivable less property income payable. It may also include a certain amount of operating surplus resulting from the production of non-market services and own account capital formation (see the annex to chapter 4 on Flows, stocks and accounting rules for more information on the valuation of the relevant output), as well as operating surplus from units within general government undertaking market production.

c. The balance of earned incomes of the household sector consists of remuneration of employees and mixed incomes accruing to households, plus property income receivable less property income payable. It also includes the operating surplus from housing services produced for own final consumption by owner-occupiers.

d. The balance of earned incomes of the non-profit institutions serving households (NPISHs) sector consists almost entirely of property income receivable less property income payable. It also includes a certain amount of operating surplus from the production of non-market services and own capital formation.

Net national income and gross national income

8.20 Net national income (NNI) is the aggregate value of the net balances of earned incomes summed over all sectors. Similarly, gross national income (GNI) is the aggregate value of the gross balances of earned incomes for all sectors.

8.21 Gross value added is strictly a production measure defined only in terms of output and intermediate consumption. It follows that GDP is also a production measure as it is obtained by summing the gross value added of all resident institutional units, in their capacities as producers, and adding the values of any taxes, less subsidies, on production or imports not already included in the values of the outputs, and value added, of resident producers. GNI is obtained by summing the balance of earned incomes of the same resident institutional units. It follows that the difference between the numerical values of GNI and GDP is equal to the difference between the total earned incomes receivable by residents from non-residents and the total earned incomes payable by residents to non-residents (that is, net income from abroad). However, as both GDP and GNI are obtained by summing over the same set of resident institutional units, there is no justification for labelling one as "domestic" and the other as "national". Both aggregates refer to the total economy defined as the complete set of resident institutional units or sectors. The difference between them is not one of coverage but the fact that one measures production while the other measures income. Both have an equal claim to be described as domestic or as national. However, as the terms "gross domestic product" and "gross national income" are deeply embedded in economic usage, it is not proposed to change them. Emphasis should be given, however, to the third rather than second letter of the acronym to emphasize the fact that GDP refers to production (output) and GNI to income.

3. The entrepreneurial income account

8.22 The allocation of earned income account may be partitioned into two sub-accounts: the entrepreneurial income account and the allocation of other earned income account. The purpose is to identify an additional balancing item, entrepreneurial income, that may be useful for market producers. Like operating surplus and mixed income, it is a balancing item that is relevant only to producers, but one that can be calculated only for institutional units and sectors and not for establishments and industries.

8.23 Entrepreneurial income is calculated by deducting from operating surplus any interest, investment income disbursements (i.e., investment income attributable to insurance policyholders, holders of pension and non-pension entitlements, and investment fund shareholders) and rent payable, and adding property incomes receivable. For the non-financial and financial corporations' sectors, the only difference between entrepreneurial income and the balance of earned incomes is that entrepreneurial income is measured before the payment of dividends, the withdrawals of income from quasi-corporations and reinvested earnings on foreign direct investment. Entrepreneurial income is not calculated for other sectors. Although government and households may contain unincorporated enterprises undertaking market production, the fact that the assets attributed to this activity

cannot be distinguished from the entirety of assets of the institution means that identification of property income relating to the activity is also difficult. (If the assets and property income could be identified, it is probable that the unincorporated enterprise could be treated as a quasi-corporation and included in one of the corporate sectors.)

8.24 Entrepreneurial income is an income concept that is close to the concept of profit or loss as understood in business accounting (at least when there is no inflation). On the other hand, it should be remembered that when profits are calculated at historic costs in business accounts, they also include nominal holding gains on the inventories and other assets owned by the enterprise; these holding gains and losses may be quite substantial during inflationary conditions.

4. The allocation of other earned income account

8.25 When the entrepreneurial income account is compiled for an institutional unit or sector, it is followed by the allocation of other earned income account in order to arrive at the balance of earned incomes. In the allocation of other earned income account, the first item listed under revenues is entrepreneurial income, the balancing item carried forward from the entrepreneurial income account instead of operating surplus or mixed income, which are the balancing items carried forward from the generation of earned income account. The only item in the account, for non-financial and financial corporations, apart from the balancing items, is the entry for the income on equity.

8.26 For general government, households and NPISHs, the allocation of other earned income account matches the allocation of earned income account.

8.27 The entrepreneurial income account and the account for other earned income are shown in table 8.3.

B. Remuneration of employees

1. Identifying employees

8.28 It is not always self-evident whether a person is an employee or self-employed, for example, some workers paid by results may be employees while others may be self-employed. The boundary may also affect the sub-sectoring of the household sector. For the integrated framework of the SNA, the main objective of distinguishing between employees and self-employed persons is to fix the boundary between remuneration of employees and other kinds of receipts. Some persons who in labour statistics may be included with the self-employed, in particular some owners of quasi-corporations and owner-managers of corporations, are treated in the integrated framework of the SNA as employees. Further discussion on the measurement of labour and definitions of the related terms appear in chapter 16 on Labour.

Labour input

8.29 In order to be classified as providing labour input, that is, either as an employee or self-employed, the person must be engaged in an activity that falls within the production boundary of the integrated framework of the SNA. The relationship of employer to employee exists when there is a written or oral agreement, which may be formal or informal, between an enterprise and a person, normally entered into voluntarily by both parties, whereby the person works for the enterprise in return for remuneration in cash or in kind. The remuneration is normally based on either the time spent at work or some other objective indicator of the amount of work done.

8.30 The self-employed are persons who work for themselves, when the enterprises they own are distinguished neither as separate legal entities nor as separate institutional units in the integrated framework of the SNA. They may be persons who are the sole owners, or joint owners, of the unincorporated enterprises in which they work; members of a producers' cooperative; or contributing family workers (that is, family members who work in an unincorporated enterprise without pay).

a. Workers engaged in production undertaken entirely for their own final consumption or own capital formation, either individually or collectively, are self-employed. Although a value may be imputed for the output of own-account production based on costs, including estimated labour costs, no imputation is made explicitly for the wages of workers engaged in such production, even in the case of collective, or

communal, projects undertaken by groups of persons working together. The surplus of the imputed value of the output over any monetary costs or taxes, less subsidies, on production explicitly incurred is treated as gross mixed income.

b. Contributing family workers, including those working without pay in unincorporated enterprises engaged wholly or partly in market production, are also treated as self-employed.

c. The whole of the equity of a corporation may be owned by a single shareholder or small group of shareholders. When those shareholders also work for the corporation and receive paid remuneration other than dividends, the shareholders are treated as employees. The owners of quasi-corporations who work in those quasi-corporations and receive paid remuneration other than withdrawal of earnings from the quasi-corporation are also treated as employees.

d. Outworkers may be either employees or self-employed depending on their exact status and circumstances. The treatment of outworkers is specified in more detail below.

8.31 The remuneration of the self-employed is treated as mixed income.

8.32 Students in their capacity as consumers of educational or training services are not employees. However, if students also have a formal commitment whereby they contribute some of their own labour as an input into an enterprise's process of production, for example, as apprentices or similar kinds of worker trainees, articled clerks, student nurses, research or teaching assistants, hospital interns, etc., they are treated as employees, whether or not they receive any remuneration in cash for the work that they do in addition to training received as in-kind payment.

Employers and own-account workers

8.33 Self-employed persons may be divided into two groups: those who do and those who do not engage paid employees on a continuous basis. Those who do engage employees on a continuous basis are described as employers and those without paid employees are described as own-account workers. The distinction may be used for purposes of sub-sectoring the household sector. Own-account workers may be further subdivided into outworkers who are under some kind of formal or informal contract to supply goods or services to a particular enterprise, and ordinary own-account workers who may be engaged in either market production or production for own final consumption or own capital formation.

Outworkers

8.34 An outworker is a person who agrees to work for a particular enterprise or to supply a certain quantity of goods or services to a particular enterprise, by prior arrangement or contract with that enterprise, but whose place of work is not within any of the establishments that make up that enterprise. The enterprise does not control the time spent at work by an outworker and does not assume responsibility for the conditions in which that work is carried out, although it may carry out checks on the quality of work. Most outworkers work at home but may use other premises of their own choice. Some outworkers are provided with the equipment or materials, or both, on which they work, by an enterprise but other outworkers may purchase their own equipment or materials, or both. In any case, outworkers have to meet some production costs themselves: for example, the actual rentals or the imputed rentals of owner-occupied housing services on the buildings in which they work; heating, lighting and power; storage or transportation; etc.

Table 8.3: The entrepreneurial income and allocation of other earned income accounts – expenditures

Entrepreneurial account

Expenditures

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
D4	Property income	87	153				240			240
D41	Investment income	56	153				209			209
D411	Interest and similar returns	56	106				162			162
D412	Income on equity									
D4121	Dividends									
D4122	Withdrawals from income of quasi-corporations									
D4123	Reinvested earnings on foreign direct investment									
D413	Investment income disbursements	0	47				47			47
D42	Rent	31	0				31			31
D42dep (-)	Depletion borne by the legal owner	- 18			0		- 18			- 18
B4g	Entrepreneurial income, gross	295	42				337			337
B4n	Entrepreneurial income, net	108	30				138			138

Allocation of other earned income account

Expenditures

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
D1	Remuneration of employees							6		6
D2	Taxes on production and imports									
D3	Subsidies									
D4	Property income	47	15	42	41	6	151	44		195
D41	Investment income	47	15	35	14	6	117	44		161
D411	Interest and similar returns			35	14	6	55	13		68
D412	Income on equity	47	15				62	31		93
D4121	Dividends	39	15				54	13		67
D4122	Withdrawals from income of quasi-corporations	8	0				8	4		12
D4123	Reinvested earnings on foreign direct investment	0	0				0	14		14
D413	Investment income disbursements							0		0
D42	Rent			7	27	0	34	0		34
D42dep (-)	Depletion borne by the legal owner				0		0			0
B5g	Balance of earned incomes, gross / National income, gross	248	27	216	1 381	7	1 879			1 879
B5n	Balance of earned income, net / National income, net	61	15	189	1 358	4	1 627			1 627

Table 8.3 (cont): The entrepreneurial income and allocation of other earned income accounts - revenues

Entrepreneurial account

Revenues

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
B2g	Operating surplus, gross	292	46	39	84	6	467			467
B3g	Mixed income, gross				61		61			61
B2n	Operating surplus, net	105	34	12	69	3	223			223
B3n	Mixed income, net				53		53			53
D4	Property income	72	149				221			221
D41	Investment income	55	146				201			201
D411	Interest and similar returns	33	106				139			139
D412	Income on equity	14	32				46			46
D4121	Dividends	10	25				35			35
D4122	Withdrawals from income of quasi-corporations						0			0
D4123	Reinvested earnings on foreign direct investment	4	7				11			11
D413	Investment income disbursements	8	8				16			16
D42	Rent	17	3				20			20
D42dep (-)	Depletion borne by the legal owner						0			0

Allocation of other earned income account

Revenues

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
B4g	Entrepreneurial income, gross	295	42				337			337
B4n	Entrepreneurial income, net	108	30				138			138
D1	Remuneration of employees				1 154		1 154	2		1 156
D2	Taxes on production and imports			235			235			235
D3	Subsidies			- 44			- 44			- 44
D4	Property income			46	123	7	176	38		214
D41	Investment income			22	102	7	131	38		169
D411	Interest and similar returns			14	49	7	70	21		91
D412	Income on equity			7	23	0	30	17		47
D4121	Dividends			5	13	0	18	14		32
D4122	Withdrawals from income of quasi-corporations			2	7	0	9	3		12
D4123	Reinvested earnings on foreign direct investment			0	3	0	3	0		3
D413	Investment income disbursements			1	30	0	31	0		31
D42	Rent			24	21	0	45	0		45
D42dep (-)	Depletion borne by the legal owner			- 18	0	0	- 18			- 18

8.35 Outworkers have some of the characteristics of employees and some of the characteristics of self-employed workers. The way in which they are to be classified is determined primarily by the basis on which they are remunerated. A distinction can be drawn between two cases that, in principle, are quite different from one another:

a. The person is remunerated directly, or indirectly, on the basis of the amount of work done, that is, by the amount of labour that is contributed as an input into some process of production, irrespective of the value of the output produced or the profitability of the production process. This kind of remuneration implies that the worker is an employee.

b. The income received by the person is a function of the value of the outputs from some process of production for which that person is responsible, however much or little work was put in. This kind of remuneration implies that the worker is self-employed.

8.36 In practice it may not always be easy to distinguish between employees and self-employed persons on the basis of these criteria. Outworkers who employ and pay others to work for them must be treated as the self-employed owners of unincorporated enterprises, that is as employers. The issue, therefore, is to distinguish own-account workers from employees.

8.37 An outworker is considered an employee when an employment relationship exists between the enterprise and the outworker. This implies the existence of an implicit or explicit employment contract or agreement whereby it is agreed that the outworker is remunerated on the basis of the work done. Conversely, an outworker is considered to be an own-account worker when there is no such implicit or explicit employment contract or agreement and the income earned by the outworker depends on the value of the goods or services supplied to the enterprise. This suggests that decisions on markets, scale of operations and finance are likely to be in the hands of self-employed outworkers who are also likely to own, or rent, the machinery or equipment on which they work.

8.38 The status of an outworker has important implications for the accounts. When the outworker is an own-account worker, the payment from the enterprise to the outworker constitutes a purchase of intermediate goods or services. For the outworker, the payment from the enterprise represents the value of output and the excess over direct costs to the outworker (treated as intermediate consumption) is gross mixed income. When the outworker is an employee, the payment constitutes remuneration of employees and so is paid out of the value added of the enterprise. Thus, the outworker's status affects the distribution of value added between enterprises as well as the distribution of incomes between remuneration of employees of the employing enterprise and net mixed income of the household of the outworker.

8.39 Some employers offer their employees the opportunity to work for extended periods away from the office. In such cases, the territory of the principal residence of the employee may be difficult to establish if they work for periods in a different territory and may need to be determined on the basis of the territory in which the predominant amount of time is spent in the year. Remuneration of such workers is recorded as a cross-border transaction only if the employee is classified as being resident in a different economy than the employer.

2. The components of remuneration of employees

8.40 Remuneration of employees is recorded under expenditures in the generation of earned income account and under revenues in the allocation of earned income account. The expenditures side of the generation of earned income account showing the detailed entries for remuneration of employees is given in table 8.4 and the corresponding revenues part of the allocation of earned income account in table 8.5. The only item, apart from the balancing items, relevant to these accounts that is not shown is the entry for remuneration of employees payable by the rest of the world, which appears in the expenditures part of the allocation of earned income account for the rest of the world.

8.41 As noted above, remuneration of employees is defined as the total remuneration, in cash or in kind, payable by an enterprise to an employee in return for work done by the latter during the accounting period.

8.42 Remuneration of employees is recorded on an accrual basis; that is, it is measured by the value of the remuneration in cash or in kind that an employee becomes entitled to receive from an employer in respect of work done during the relevant period, whether paid in advance, simultaneously or in arrears of the work itself. No remuneration of employees is payable in respect of unpaid work undertaken voluntarily, including the work done by members of a household within an unincorporated enterprise owned by the same household. Remuneration of employees does

not include any taxes payable by the employer on the wage and salary bill, for example, a payroll tax; such taxes are treated as taxes on production in the same way as taxes on buildings, land or other assets used in production.

8.43 Remuneration of employees has two main components:

a. Wages and salaries payable in cash or in kind;

b. Social insurance contributions payable by employers, which include contributions to social security schemes; actual social contributions to other social insurance schemes; and imputed social contributions to other social insurance schemes.

Social insurance schemes and the nature of benefits they provide are discussed in section D of chapter 9 on Transfer income accounts.

Table 8.4: The generation of earned income account - remuneration of employees – expenditures

Expenditures

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
D1	Remuneration of employees	986	44	98	11	11	1 150			1 150
D11	Wages and salaries	841	29	63	11	6	950			950
D12	Employers' social contributions	145	15	35	0	5	200			200
D121	Employers' actual social contributions	132	14	31	0	4	181			181
D1211	Employers' actual pension contributions	122	14	28	0	4	168			168
D1212	Employers' actual non-pension contributions	10	0	3	0	0	13			13
D122	Employers' imputed social contributions	13	1	4	0	1	19			19
D1221	Employers' imputed pension contributions	12	1	4	0	1	18			18
D1222	Employers' imputed non-pension contributions	1	0	0	0	0	1			1
D2	Taxes on production and imports						235			235
D3	Subsidies						- 44			- 44
B2g	Operating surplus, gross	292	46	39	84	6	467			467
B3g	Mixed income, gross				61		61			61
P51d1	Depreciation on gross operating surplus	157	12	27	15	3	214			214
P51d2	Depreciation on gross mixed income				8		8			8
P81	Depletion on gross operating surplus	30			0		30			30
P82	Depletion on gross mixed income				0		0			0
B2n	*Operating surplus, net*	105	34	12	69	3	223			223
B3n	*Mixed income, net*				53		53			53

Table 8.5: The allocation of earned income account - remuneration of employees - revenues

Revenues

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
B2g	Operating surplus, gross	292	46	39	84	6	467			467
B3g	Mixed income, gross				61		61			61
B2n	*Operating surplus, net*	105	34	12	69	3	223			223
B3n	*Mixed income, net*				53		53			53
D1	Remuneration of employees				1 154		1 154	2		1 156
D11	Wages and salaries				954		954	2		956
D12	Employers' social contributions				200		200	0		200
D121	Employers' actual social contributions				181		181	0		181
D1211	Employers' actual pension contributions				168		168	0		168
D1212	Employers' actual non-pension contributions				13		13	0		13
D122	Employers' imputed social contributions				19		19	0		19
D1221	Employers' imputed pension contributions				18		18	0		18
D1222	Employers' imputed non-pension contributions				1		1	0		1
D2	Taxes on production and imports			235			235			235
D3	Subsidies			- 44			- 44			- 44
D4	Property income	72	149	46	123	7	397	38		435
D42dep (-)	Depletion borne by the legal owner			- 18			- 18			- 18

Wages and salaries

8.44 Wages and salaries include the values of any social contributions, income taxes, etc., payable by the employee even if they are actually withheld by the employer for administrative convenience or other reasons and paid directly to social insurance schemes, tax authorities, etc., on behalf of the employee. Wages and salaries may be paid in various ways, including goods or services provided to employees as remuneration in kind, instead of, or in addition to, remuneration in cash.

Wages and salaries in cash

8.45 Wages and salaries in cash include the following kinds of remuneration:

a. Wages or salaries payable at regular weekly, monthly or other intervals, including payments by results and piecework payments; enhanced payments or special allowances for working overtime, at nights, at weekends or other unsocial hours; allowances for working away from home or in disagreeable or hazardous circumstances; expatriation allowances for working abroad; etc.;

b. Supplementary allowances payable regularly, such as housing allowances or allowances to cover the costs of travel to and from work, but excluding social benefits (see below);

c. Wages or salaries payable to employees away from work for short periods, for example, on holiday or as a result of a temporary halt to production, except during absences due to sickness, injury, etc. (see below);

d. Ad hoc bonuses or other exceptional payments linked to the overall performance of the enterprise made under incentive schemes;

e. Commissions, gratuities and tips received by employees: these should be treated as payments for services rendered by the enterprise employing the worker, and so should also be included in the output and gross value added of the employing enterprise when they are paid directly to the employee by a third party.

8.46 Wages and salaries in cash do not include the reimbursement by employers of expenditures made by employees in order to enable them to take up their jobs or to carry out their work. For example:

a. The reimbursement of travel, removal or related expenses made by employees when they take up new jobs or are required by their employers to move their homes to different parts of the country or to another country;

b. The reimbursement of expenditures by employees on tools, equipment, special clothing or other items that are needed exclusively, or primarily, to enable them to carry out their work. The amounts reimbursed are treated as intermediate consumption by employers. To the extent that employees who are required by their contract of employment to purchase tools, equipment, special clothing, etc., are not fully reimbursed, the remaining expenses they incur should be deducted from the amounts they receive in wages and salaries and the employers' intermediate consumption increased accordingly. Expenditures on items needed exclusively, or primarily, for work do not form part of household final consumption expenditures, whether reimbursed or not.

8.47 Wages and salaries in cash also do not include social insurance benefits paid by employers in the form of:

a. Children's, spouse's, family, education or other allowances in respect of dependents;

b. Payments made at full, or reduced, wage or salary rates to workers absent from work because of illness, accidental injury, maternity leave, etc.;

c. Severance payments to workers or their survivors who lose their jobs because of redundancy, incapacity, accidental death, etc.

In practice, it may be difficult to separate payments of wages or salaries during short periods of absence due to sickness, accidents, etc., from other payments of wages and salaries, in which case they have to be grouped with the latter.

8.48 In some instances a benefit such as a car or extra pension contributions may not be provided free but be "purchased" from the employer by foregoing some salary. The attraction of such schemes lies in the tax advantages of doing so. A car bought by the employer and sold to the employee may be taxed at a lower rate than a car purchased by an individual; pension contributions may be taxed differently from other income if deducted at source. In these cases, the full salary should be recorded as payable in cash with the cost to the employee shown as consumption expenditure or pension contributions, etc. as appropriate.

Wages and salaries in kind

8.49 Employers may remunerate their employees in kind for various reasons. For example:

a. There may be tax advantages for the employer, the employee, or both by avoiding payments in cash;

b. The employer may wish to dispose of outputs that are periodically in excess supply.

8.50 Income in kind may bring less satisfaction than income in cash because employees are not free to choose how to spend it. Some of the goods or services provided to employees may be of a type or quality that the employee would not normally buy. Nevertheless, they must be valued consistently with other goods and services. When the goods or services have been purchased by the employer, they should be valued at purchasers' prices. When produced by the employer, they should be valued at producers' prices. When provided free, the value of the wages and salaries in kind is given by the full value of the goods and services in question. When provided at reduced prices, the value of the wages and salaries in kind is given by the difference between the full value of the goods and services and the amount paid by the employees.

8.51 Goods or services that employers are obliged to provide to their employees in order for them to be able to carry

out their work are treated as intermediate consumption by the employer: for example, special protective clothing. A list of such items is given in paragraph 7.249. Remuneration in kind, on the other hand, consists of goods and services that are not necessary for work and can be used by employees in their own time, and at their own discretion, for the satisfaction of their own needs or wants or those of other members of their households.

8.52 Almost any kind of consumption good or service may be provided as remuneration in kind. The following includes some of the most common types of goods and services provided without charge, or at reduced prices, by employers to their employees:

a. meals and drinks provided on a regular basis including any subsidy element of an office canteen (for practical reasons, it is unnecessary to make estimates for meals and drinks consumed as part of official entertainment or during business travel);

b. housing services or accommodation of a type that can be used by all members of the household to which the employee belongs;

c. the services of vehicles or other durables provided for the personal use of employees;

d. goods and services produced as outputs from the employer's own processes of production, such as free travel for the employees of railways or airlines;

e. sports, recreation or holiday facilities for employees and their families;

f. transportation to and from work, free or subsidized car parking, when it would otherwise have to be paid for;

g. childcare for the children of employees.

8.53 Some of the services provided by employers, such as transportation to and from work, car parking and childcare have some of the characteristics of intermediate consumption. However, employers are obliged to provide these facilities to attract and retain labour, and not because of the nature of the production process or the physical conditions under which employees have to work. On balance, they are more like other forms of remuneration of employees than intermediate consumption. Many workers have to pay for transportation to and from work, car parking and childcare out of their own incomes, the relevant expenditures being recorded as final consumption expenditures.

8.54 A frequent item provided as income in kind is a car. The car may be provided free to the employee but for tax purposes an imputed cash amount is attached to the benefit. In a country where many cars are provided as a fringe benefit to employees, the purchasing power of the employer may be such as to obtain a significant discount on the purchase price of the car. Thus the employee receives a higher quality car than the cash equivalent would buy for an individual. The value of the car to the employee should be estimated at the actual cost to the employer.

8.55 Remuneration in kind may also include the value of the interest foregone by employers when they provide loans to employees at reduced, or even zero rates of interest for purposes of buying houses, furniture or other goods or services. Its value may be estimated as the amount the employee would have to pay if average mortgage, or consumer loan, interest rates were charged less the amount of interest actually paid. The sums involved could be large when nominal interest rates are very high because of inflation but otherwise they may be too small and too uncertain to be worth estimating.

Stock options

8.56 Another form of income in kind results from the practice of an employer giving an employee the option to buy stocks (shares) at some future date. The details of valuing and recording of stock options are described in chapter 25 on Selected issues in financial instruments.

Employers' social contributions

8.57 ***Employers' social contributions (D12) are social contributions payable by employers to social security funds and other social insurance schemes, to secure social benefits for their employees***. Social security schemes are operated by general government; other social insurance schemes may be operated by the employers themselves,

by an insurance corporation or an autonomous pension scheme.

8.58 As employers' social contributions are made for the benefit of their employees, their value is recorded as one of the components of remuneration of employees together with wages and salaries in cash and in kind. The social contributions are then recorded as being paid by the employees as current transfers to the social security schemes or other social insurance schemes. Although it is administratively more efficient for employers to pay the contributions on behalf of their employees, this must not be allowed to obscure the underlying economic reality. The payment made by the employer to the social security scheme or other social insurance schemes is not, in fact, a current transfer to the fund on the part of the employer. The transfer takes place between the employee and the social security scheme or other social insurance schemes out of remuneration provided by the employer. The situation is parallel to one in which income taxes payable by employees are deducted by employers from the wages or salaries and paid directly to the tax authorities. In this case, it is evident that the taxes are not current transfers payable by the employers. It is customary to describe the employers' social contributions as being re-routed in the accounts via the employees' earned income and transfer income accounts. However, the accounts depict the various payables and receivables correctly. The direct payment of social contributions, or income taxes, by employers to social security schemes, other social insurance schemes or tax authorities is merely a short cut taken on grounds of administrative convenience and efficiency.

8.59 An amount equal in value to employers' social contributions is first recorded in the generation of earned income account as one of the components of remuneration of employees and then recorded either in the income transfers other than social transfers in kind account as being transferred by households to social security funds or other social insurance schemes as the case may be, or is recorded in the use of income account as the payment by households for the financial services associated with running the schemes. The transactions are recorded simultaneously in all three accounts at the times when the work that gives rise to the requirement to pay the contributions is carried out. The contributions paid to social security schemes may be fixed amounts per employee or may vary with the levels of wages or salaries paid. The amounts paid under other social insurance schemes depend on the arrangements agreed between employers and employees.

8.60 Social insurance schemes in respect of pensions are of two types, described as defined contribution schemes or defined benefit schemes. A defined contribution scheme is one where the benefits are determined by the contributions actually made to the scheme. Under a defined benefit scheme, the ultimate benefit is calculated by means of a formula embodied in the terms of the social insurance scheme. Similarly, the increase in the employee's entitlement due to the period of employment in the current accounting period can also be determined by the formula.

8.61 The contributions made by employers to social insurance schemes are divided into actual and imputed contributions.

8.62 For both actual and imputed contributions, the components relating to pensions and other benefits are shown separately.

Employers' actual contributions to social insurance schemes

8.63 The actual contributions by employers to social insurance schemes consist of actual contributions made to both social security and other social insurance schemes. The contributions relating to pensions and other benefits are shown separately.

Employers' imputed contributions to social insurance schemes

Employers' imputed pension contributions

8.64 There are no imputed contributions to social security schemes.

8.65 For a defined contribution pension scheme, there are no imputed contributions unless the employer operates the scheme himself. In that case, the value of the costs of operating the scheme is treated as an imputed contribution payable to the employee as part of remuneration of employees. This amount is also recorded as final consumption expenditure by households on financial services.

8.66 For a defined benefit pension scheme, there is an imputed contribution by the employer calculated as a residual. It must be such that the sum of the employer's actual contribution plus the sum of any contribution by the employee plus the imputed contribution by the employer is equal to the current service increase (i.e., the increase in entitlements resulting from the employee service in the current period), including the costs of operating the scheme.

8.67 Some defined benefit pension schemes may be so well run that the funds available to the scheme exceed the liabilities of the scheme to present and past employees. It is possible that in this case the employer may take a "contribution holiday" and not make actual contributions for one or more periods. Nonetheless, an imputed contribution by the employer should be calculated and recorded as described here.

8.68 Some schemes may be expressed as non-contributory because no actual contributions are ever made by the employee. Nevertheless, an imputed contribution by the employer is calculated and imputed as just described.

Employers' imputed non-pension contributions

8.69 Some employers provide non-pension benefits themselves directly to their employees, former employees or dependents without involving an insurance enterprise or autonomous pension fund, and without creating a special fund or segregated reserve for the purpose. In this situation, existing employees may be considered as being protected against various specified needs or circumstances, even though no reserves are built up to provide future entitlement. Remuneration should therefore be imputed for such employees equal in value to the amount of social contributions that would be needed to secure the de facto entitlements to the social benefits they accumulate. These amounts take into account any actual contributions made by the employer or employee and depend not only on the levels of the benefits currently payable but also on the ways in which employers' liabilities under such schemes are likely to evolve in the future as a result of factors such as expected changes in the numbers, age distribution and life expectancies of their present and previous employees. Thus, the values that should be imputed for the contributions ought, in principle, to be based on the same kind of actuarial considerations that determine the levels of premiums charged by insurance enterprises.

8.70 In practice, however, it may be difficult to decide how large such imputed contributions should be. The enterprise may make estimates itself, perhaps on the basis of the contributions paid into similar funded schemes, in order to calculate its likely liabilities in the future, and such estimates may be used when available. Otherwise, the only practical alternative may be to use the unfunded non-pension benefits payable by the enterprise during the same accounting period as an estimate of the imputed remuneration that would be needed to cover the imputed contributions. While there are obviously many reasons why the value of the imputed contributions that would be needed may diverge from the unfunded non-pension benefits actually paid in the same period, such as the changing composition and age structure of the enterprise's labour force, the benefits actually paid in the current period may nevertheless provide the best available estimates of the contributions and associated imputed remuneration.

8.71 The fact that, failing other information, the value of contributions for a non-contributory scheme may be set equal to the value of benefits does not mean that the benefits themselves are treated as part of remuneration of employees.

C. Taxes on production and on imports

1. Recording of taxes on production and on imports

8.72 Taxes are compulsory, unrequited payments, in cash or in kind, made by institutional units to government units. They are described as unrequited because the government provides nothing directly in return to the individual unit making the payment, although governments may use the funds raised in taxes to provide goods or services to other units, either individually or collectively, or to the community as a whole.

8.73 The full classification of taxes on production and on imports consists of:

Taxes on products

Value added type taxes (VAT)

Taxes and duties on imports excluding VAT

Import duties

Taxes on imports excluding VAT and import duties

Export taxes

Taxes on products, excluding VAT, import and export taxes

Other taxes on production

8.74 At the highest level of the classification, taxes on production and on imports consist of taxes on products and other taxes on production. Taxes on products consist of taxes on goods and services that become payable as a result of the production, sale, transfer, leasing or delivery of those goods or services, or as a result of their use for own consumption or own capital formation. The way in which taxes on products are recorded in the integrated framework of the SNA depends on the valuation used for the recording of output as described below. Other taxes on production consist mainly of taxes on the ownership or use of land, buildings or other assets used in production or on the labour employed, or remuneration of employees paid. Whatever the valuation of output used, other taxes on production are always recorded as a charge on value added in the generation of earned income account.

8.75 A full explanation of the content of each of the categories of taxes on production and on imports is given below after a discussion of the rules of recording taxes. This explanation provides links to the main publications of data on tax yields, the *GFSM* and the *OECD Revenue Statistics*.

8.76 In view of accounting for environmental sustainability, countries are encouraged to compile, as supplementary items, data on environmental taxes on production in line with the definition provided in chapter IV of the *SEEA Central Framework*.

8.77 In business accounting, taxes on production, except invoiced VAT, are usually regarded as costs of production that may be charged against sales or other receipts when calculating profits for tax or other purposes. They correspond to "indirect taxes" as traditionally understood, indirect taxes being taxes that supposedly can be passed on, in whole or in part, to other institutional units by increasing the prices of the goods or services sold. However, it is extremely difficult, if not impossible, to determine the real incidence of different kinds of taxes, and the use of the terms "direct" and "indirect" taxes has fallen out of favour in economics and is not used in the SNA.

The recording of taxes on production and on imports in the accounts

8.78 Taxes on production and imports are recorded under expenditures in the generation of earned income account and under revenues in the allocation of earned income account.

8.79 In the generation of earned income account, taxes on imports are recorded only at the level of the total economy as they are not payable out of the value added of domestic producers. Moreover, at the level of an individual institutional unit or sector, only those taxes on products that have not been deducted from the value of the output of that unit or sector need to be recorded under expenditures in its generation of earned income account. These vary depending upon the way in which output is valued. When output is valued at basic prices, all taxes (subsidies) on products payable (receivable) on the goods or services produced as outputs are deducted from (added to) the value of that output at producers' prices. Therefore they do not have to be recorded under expenditures in the generation of earned income account of the units or sectors concerned, being recorded only at the level of the total economy, in the same way as taxes on imports. When output is valued at producers' prices, all taxes (subsidies) on products payable (receivable) on outputs have to be recorded under expenditures in the generation of earned income accounts of the units or sectors concerned, except invoiced VAT or similar deductible taxes, as invoiced VAT is never included in the value of output. Non-deductible VAT and similar taxes are recorded under expenditures only at the level of the total economy, like taxes on imports.

8.80 Other taxes, less subsidies, on production, that is, taxes payable, or subsidies receivable, on the land, assets, labour, etc., employed in production are not taxes payable, or subsidies receivable, per unit of output and cannot be deducted from the producer's price. They are recorded as being payable out of the value added of the individual producers or sectors concerned.

8.81 In the allocation of earned income account, taxes, less subsidies, on production and imports appear under revenues

only for the general government sector and the total economy, apart from any such taxes payable to foreign governments.

Taxes versus fees

8.82 One of the regulatory functions of governments is to forbid the ownership or use of certain goods or the pursuit of certain activities, unless specific permission is granted by issuing a licence or other certificate for which a fee is demanded. Price levels for these types of mandatory permissions are set by the government, often through some type of executive, legislative, or statutory power. Those seeking the permission or authorization frequently pay with no option to receive a refund should the licence (or similar) not be granted. The permission or authorization granted under these types of schemes is not transferable or tradeable, and so has no direct economic value. Indeed, for many such regulatory schemes the payer of the fee is not to be seen as the primary beneficiary, as the motivation behind the regulation or licencing of an activity or good is to protect society as a whole and ensure that those engaging in an activity or owning a good are able to do so safely in accordance with laws. For example, driving licences are intended to ensure that those using the road networks have the necessary skills and knowledge to do so safely. Although the payer benefits from being able to drive, the primary beneficiary is society. For the above reasons, mandatory payments for most regulatory licences, or similar certificates, are to be recorded as taxes, as they are by nature compulsory and unrequited.

8.83 Although most payments under mandatory regulatory schemes should be recorded as taxes, there may be cases where recording as a sale of service is appropriate despite the compulsory nature of the payment. For instance, the cost of a mandatory safety inspection may be based on the cost to government of conducting the inspection and could include a service element, such as providing guidance on how identified safety hazards can be rectified. In this case it might be appropriate to record the payment as a payment of service rather than a tax, but only if the service element of the payment is considered sufficiently material. To recap, the default recording for payments under government-imposed mandatory regulatory schemes should be as taxes, unless a significant service element can be identified leading to recording as a payment of service.

8.84 A slightly different but related issue concerns the recording of stability fees for deposit insurance schemes. Governments may impose levies on financial corporations both as a form of payment for deposit insurance services provided by government and also as instruments to manage financial stability. Payments to stability schemes should be classified as either a tax or as a payment for an insurance-type of transaction. The criterion of proportionality between payments and the provision of an insurance-type of services (including payments for the risk element) should be examined on a case by case basis, whereby the existence of a fund functioning on insurance rules with a full set of accounts may indicate the provision of an insurance-type service, while in the case that the payments are not put aside, can be used for other purposes, or are compulsory as part of a mandatory regulatory scheme from which the financial corporation cannot opt out, would indicate a treatment of the payments as taxes.

Links with the IMF and OECD tax classifications

8.85 The coverage of taxes in the integrated framework of the SNA coincides with that of "tax revenue" as defined in the *GFSM*. In contrast to "taxes" as defined in the *OECD Revenue Statistics*, the integrated framework of national accounts includes imputed taxes or subsidies resulting from the operation of official multiple exchange rates, but does not classify social security contributions under the heading of taxes. Chapter 5 of the *GFSM 2014* contains a detailed listing and classification of taxes according to the nature of the tax. Annex A of *Revenue Statistics* contains a closely related classification.

8.86 The categories of taxes distinguished in the integrated framework of the SNA depend on the interaction of the following three factors, of which the nature of tax is only one:

a. The nature of the tax, as specified in the classifications of the *GFSM* and the *OECD Revenue Statistics*;

b. The type of institutional unit paying the tax;

c. The circumstances in which the tax is payable.

8.87 Thus, payments of exactly the same tax may be recorded under two different headings in the integrated framework of the SNA. For example, payment of an excise duty may appear under "taxes on imports, excluding value added taxes (VAT) and import duties" or under "taxes on products, excluding VAT, import and export taxes" depending upon whether the excise duty is paid on an imported or domestically produced good. Similarly, payments of an annual tax on automobiles may be recorded under "other taxes on production" or under "current taxes on income, wealth, etc." depending upon whether the tax is paid by an enterprise or by a household. For this reason, it is not possible to arrive at the SNA categories simply by regrouping the classifications of the *GFSM* and the *OECD Revenue Statistics*. However, in order to take advantage of the existence of these detailed classifications, a bridge table has been published as an annex to the SNA, in which each category of tax listed below contains a cross-reference to the corresponding classifications of the latest versions of the *GFSM* and the *OECD Revenue Statistics*. It should be noted, though, that the SNA categories are included within the categories of the *GFSM* and the *OECD Revenue Statistics* but may not be identical with them.

The accrual basis of recording

8.88 All taxes should be recorded on an accrual basis in the SNA, that is, when the activities, transactions or other events occur that create the liabilities to pay taxes. However, some economic activities, transactions or events, which under tax legislation ought to impose on the units concerned the obligation to pay taxes, permanently escape the attention of the tax authorities. It would be unrealistic to assume that such activities, transactions or events give rise to financial assets or liabilities in the form of payables and receivables. For this reason the amounts of taxes to be recorded in the integrated framework of the SNA are determined by the amounts due for payment only when evidenced by tax assessments, declarations or other instruments, such as sales invoices or customs declarations, that create liabilities in the form of clear obligations to pay on the part of taxpayers. (In determining the amount of tax accruing, care must be taken not to include tax unlikely ever to be collected.) Nevertheless, in accordance with the accrual principle, the times at which the taxes should be recorded are the times at which the tax liabilities arise. For example, a tax on the sale, transfer or use of output should be recorded when that sale, transfer or use took place, which is not necessarily the same time as when the tax authorities were notified, when a tax demand was issued, when the tax was due to be paid or when the payment was actually made. Some flexibility is permitted, however, as regards the time of recording of income taxes deducted at source.

8.89 Government may establish tax amnesty programmes. Two broad types of such programmes can be distinguished: (i) amnesties to speed up, or encourage, payment of taxes which have been accrued but are unpaid (i.e., relating to already disclosed transactions, events, and/or assets); and (ii) amnesties to capture revenue from economic activities and/or assets that have previously escaped the attention of the tax authorities (i.e., relating to previously undisclosed transactions, events, and/or assets). The time of recording and measurement of revenue arising from tax amnesties will depend on the exact nature of the amnesty granted and whether the revenue has been previously accrued. However, in accordance with the accrual principle, if a tax amnesty establishes tax obligations for previously undisclosed transactions, events or assets, then the tax revenue should be recorded when the tax obligation is established and not to a period prior to the tax amnesty.

8.90 In some countries, and for some taxes, the amounts of taxes eventually paid may diverge substantially and systematically from the amounts due to be paid to the extent that not all of the latter can be effectively construed as constituting financial liabilities as these are understood within the integrated framework of the SNA. In such cases, it may be preferable for analytic and policy purposes to ignore unpaid tax liabilities and confine the measurement of taxes within the integrated framework to those actually paid. Nevertheless, the taxes actually paid should still be recorded on an accrual basis at the times at which the events took place that gave rise to the liabilities.

Interest, fines or other penalties

8.91 In principle, interest charged on overdue taxes or fines, or penalties imposed for the attempted evasion of taxes, should be recorded separately and not as taxes. However, it may not be possible to separate payments of interest, fines or other penalties from the taxes to which they relate, so that in practice they are usually grouped with taxes.

Taxes and subsidies within the distribution of earned income accounts

8.92 Table 8.6 shows the details of taxes and subsidies as expenditures in the generation of earned income account; table 8.7 shows them as revenues in the allocation of earned income account. Subsidies are shown in the two tables as negative expenditure and negative revenues, respectively. Because of the way that taxes on products and subsidies on products are recorded in the integrated framework of the SNA, no details of payables by sector appear in table 8.6, only the totals. This is consistent with the presentation in table 7.1. Taxes and subsidies on products payable by the rest of the world appear in the revenues part of the allocation of earned income account, not shown here.

Table 8.6: The generation of earned income account - taxes and subsidies on production – expenditures

Expenditures

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
D1	Remuneration of employees	986	44	98	11	11	1 150			1 150
D2	Taxes on production and imports						235			235
D21	Taxes on products						141			141
D211	Value added type taxes (VAT)						121			121
D212	Taxes and duties on imports excluding VAT						17			17
D2121	Import duties						17			17
D2122	Taxes on imports excluding VAT and import duties						0			0
D213	Export taxes						1			1
D214	Taxes on products excluding VAT, import and export taxes						2			2
D29	Other taxes on production	88	4	1	0	1	94			94
D3	Subsidies						- 44			- 44
D31	Subsidies on products						- 8			- 8
D311	Import subsidies						0			0
D312	Export subsidies						0			0
D319	Other subsidies on products						- 8			- 8
D39	Other subsidies on production	- 35	0	0	- 1	0	- 36			- 36
B2g	Operating surplus, gross	292	46	39	84	6	467			467
B3g	Mixed income, gross				61		61			61
P51d1	Depreciation on gross operating surplus	157	12	27	15	3	214			214
P51d2	Depreciation on gross mixed income				8		8			8
P81	Depletion on gross operating surplus	30			0		30			30
P82	Depletion on gross mixed income				0		0			0
B2n	*Operating surplus, net*	105	34	12	69	3	223			223
B3n	*Mixed income, net*				53		53			53

Table 8.7: The allocation of earned income account - taxes and subsidies on production - revenues

Revenues

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
B2g	Operating surplus, gross	292	46	39	84	6	467			467
B3g	Mixed income, gross				61		61			61
B2n	*Operating surplus, net*	105	34	12	69	3	223			223
B3n	*Mixed income, net*				53		53			53
D1	Remuneration of employees				1 154		1 154	2		1 156
D2	Taxes on production and imports			235			235			235
D21	Taxes on products			141			141			141
D211	Value added type taxes (VAT)			121			121			121
D212	Taxes and duties on imports excluding VAT			17			17			17
D2121	Import duties			17			17			17
D2122	Taxes on imports excluding VAT and import duties			0			0			0
D213	Export taxes			1			1			1
D214	Taxes on products excluding VAT, import and export taxes			2			2			2
D29	Other taxes on production			94			94			94
D3	Subsidies			- 44			- 44			- 44
D31	Subsidies on products			- 8			- 8			- 8
D311	Import subsidies			0			0			0
D312	Export subsidies			0			0			0
D319	Other subsidies on products			- 8			- 8			- 8
D39	Other subsidies on production			- 36			- 36			- 36
D4	Property income	72	149	46	123	7	397	38		435
D42dep (-)	Depletion borne by the legal owner			18			-18			-18

2. Taxes on products

8.93 ***Taxes on products (D21) are taxes payable per unit of a good or service.*** The taxes may be a specific amount of money per unit of quantity of a good or service (the quantity units being measured either in terms of discrete units or continuous physical variables such as volume, weight, strength, distance, time, etc.), or it may be calculated ad valorem as a specified percentage of the price per unit or value of the goods or services transacted. Taxes on products usually becomes payable when they are produced, sold or imported, but they may also become payable in other circumstances, such as when a good is exported, leased, transferred, delivered, or used for own consumption or own capital formation. An enterprise may or may not itemize the amount of a tax on a product separately on the invoice or bill that it charges its customers.

Value added type taxes

8.94 ***Value added type taxes (VAT) (D211) are taxes on goods or services collected in stages by enterprises but that are ultimately charged in full to the final purchasers***. Such taxes have already been described in paragraphs 7.63 to 7.70. They are described as a "deductible" tax because producers are not usually required to pay to the government the full amount of the tax they invoice to their customers, being permitted to deduct the amount of tax they have been invoiced on their own purchases of goods or services intended for intermediate consumption or fixed capital formation. VAT is usually calculated on the price of the good or service including any other tax on the product. VAT is also payable on imports of goods or services in addition to any import duties or other taxes on the imports.

Taxes and duties on imports excluding VAT

8.95 ***Taxes and duties on imports excluding VAT (D212) consist of taxes on goods and services (except VAT) that become payable at the moment when goods enter the economic territory or when services are delivered by non-resident producers to residents.***

8.96 Imported goods on which all the required taxes on imports have been paid when they enter the economic territory may subsequently become subject to a further tax, or taxes, as they circulate within the economy. For example, excise duties or sales taxes may become due on goods as they pass through the chain of wholesale or retail distribution, such taxes being levied on all goods at the same point, whether those goods have been produced by resident enterprises or imported. Taxes payable subsequently on goods that have been already imported are not recorded as taxes on imports but as taxes on products, excluding VAT, import and export taxes.

8.97 Exceptionally, some taxes and duties may be payable on goods that physically enter the country but where there is no change of ownership so they are not treated as imports. Nevertheless, any such taxes and duties are still included in the heading of taxes and duties on imports.

Import duties

8.98 ***Import duties (D2121) consist of customs duties or other import charges that are payable on goods of a particular type when entering the economic territory***. The duties are specified under customs tariff schedules. They may be intended as a means of raising revenue or discouraging imports in order to protect resident goods producers.

Taxes on imports excluding VAT and import duties

8.99 ***Taxes on imports excluding VAT and import duties (D2122) consist of taxes (except VAT and import duties) that become payable when goods enter the economic territory or services are delivered by non-resident producers to residents***. They include the following:

a. General sales taxes: these consist of general sales taxes (excluding VAT) that are payable on imports of goods and services when the goods enter the economic territory or the services are delivered to residents;

b. Excise duties: excise duties are taxes levied on specific kinds of goods, typically alcoholic beverages, tobacco and fuels; they may be payable in addition to import duties when the goods enter the economic territory;

c. Taxes on specific services: these may be payable when non-resident enterprises provide services to resident units within the economic territory;

d. Profits of import monopolies: these consist of the profits transferred to governments of import marketing boards, or other public enterprises exercising a monopoly over the imports of some good or service. The justification for treating these profits as implicit taxes on products is the same as that shown in paragraph 8.101 (e) for fiscal monopolies;

e. Taxes resulting from multiple exchange rates: these consist of implicit taxes resulting from the operation

of multiple exchange rates by the central bank or other official agency.

Export taxes

8.100 ***Export taxes (D213) consist of taxes on goods or services that become payable by government when the goods leave the economic territory or when the services are delivered to non-residents***. They include the following:

a. Export duties: general or specific taxes or duties on exports;

b. Profits of export monopolies: these consist of the profits transferred to governments of export marketing boards, or other public enterprises exercising a monopoly over the exports of some good or service. The justification for treating these profits as implicit taxes on products is the same as that shown in paragraph 8.101 (e) for fiscal monopolies;

c. Taxes resulting from multiple exchange rates: these consist of implicit taxes on exports resulting from the operation of an official system of multiple exchange rates.

Taxes on products excluding value added tax, import and export taxes

8.101 ***Taxes on products excluding value added tax, import and export taxes (D214) consist of taxes on goods and services that become payable as a result of the production, sale, transfer, leasing or delivery of those goods, or services, or as a result of their use for own consumption or own capital formation***. They include the following commonly occurring taxes:

a. General sales or turnover taxes: these include manufacturers', wholesale and retail sales taxes, purchase taxes, turnover taxes, and so on, but exclude VAT and other systems of deductible taxes.

b. Excise duties: these consist of taxes levied on specific kinds of goods, typically alcoholic beverages, tobacco and fuels.

c. Taxes on specific services: these include taxes on transportation, communications, insurance, advertising, hotels or lodging, restaurants, entertainments, gambling and lotteries, sporting events, etc.

d. Taxes on financial and capital transactions: these consist of taxes payable on the purchase or sale of non-financial and financial assets including foreign exchange. They become payable when the ownership of land or other assets changes, except as a result of capital transfers (mainly inheritances and gifts). They are treated as taxes on the services of the unit selling the asset.

e. Profits of fiscal monopolies: these consist of the profits of fiscal monopolies that are transferred to government. Fiscal monopolies are public corporations, public quasi-corporations, or government-owned unincorporated enterprises that have been granted a legal monopoly over the production or distribution of a particular kind of good or service in order to raise revenue and not in order to further the interests of public economic or social policy. Such monopolies are typically engaged in the production of goods or services that may be heavily taxed in other countries, for example, alcoholic beverages, tobacco, matches, petroleum products, salt, playing cards, etc. The exercise of monopoly powers is simply an alternative way for the government to raise revenue instead of the more overt procedure of taxing the private production of such products. In such cases the sales prices of the monopolies are deemed to include implicit taxes on the products sold. While in principle only the excess of the monopoly profits over some notional "normal" profits should be treated as taxes, it is difficult to estimate this amount and, in practice, the value of the taxes should be taken as equal to the amount of the profits actually transferred from fiscal monopolies to government. When a public enterprise is granted monopoly powers as a matter of deliberate economic or social policy because of the special nature of the good or service or the technology of production (for example, public utilities, post offices and telecommunications, railways, etc.) it should not be treated as a fiscal monopoly. As a general rule, fiscal monopolies tend to be confined to the production of consumer goods or fuels. As the profits of a fiscal monopoly are calculated for the enterprise as a whole, it is not possible to estimate the average amount of the tax per unit of good or service sold when the enterprise has more than one good or service as output without introducing an assumption about the rates of tax on the different

products. Unless there is good reason otherwise, it should be assumed that the same ad valorem rate of tax is applied to all products, this rate being given by the ratio of the total value of the implicit taxes to the value of total sales less the total value of the implicit taxes. It is necessary to establish this rate in order to be able to calculate the basic prices of the products concerned.

3. Other taxes on production

8.102 ***Other taxes on production (D29) consist of taxes on production other than taxes on products that enterprises incur as a result of engaging in production***. Such taxes do not include any taxes on the profits or other income received by the enterprise and are payable regardless of the profitability of the production. They may be payable on the land, fixed assets or labour employed in the production process or on certain activities or transactions. Other taxes on production include the following:

a. Taxes on payroll or work force: these consist of taxes payable by enterprises assessed either as a proportion of the wages and salaries paid or as a fixed amount per person employed. They do not include compulsory social security contributions paid by employers or any taxes paid by the employees themselves out of their wages or salaries;

b. Recurrent taxes on land, buildings or other structures: these consist of taxes payable regularly, usually each year, in respect of the use or ownership of land, buildings or other structures utilized by enterprises in production, whether the enterprises own or rent such assets;

c. Business and professional licences: these consist of taxes paid by enterprises in order to obtain a licence to carry on a particular kind of business or profession. Examples are taxi licences and casino licences. Under limited circumstances such licenses might be considered as payments for services rather than taxes, and these are discussed in paragraphs 8.82 and 8.83. Licences to use a natural resource, however, are generally not treated as a tax. The treatment of these licences and permits is described in more detail in chapter 27 on Contracts, leases, licenses and permits. (See also paragraph 9.66 (c) for the treatment of licences obtained by households for their own personal use.);

d. Taxes on the use of fixed assets or other activities: these include taxes levied periodically on the use of vehicles, ships, aircraft or other machinery or equipment used by enterprises for purposes of production, whether such assets are owned or rented. These taxes are often described as licences, and are usually fixed amounts that do not depend on the actual rate of usage;

e. Stamp taxes: these consist of stamp taxes that do not fall on particular classes of transactions already identified, for example, stamps on legal documents or cheques. These are treated as taxes on the production of business or financial services. However, stamp taxes on the sale of specific products, such as alcoholic beverages or tobacco, are treated as taxes on products;

f. Taxes on pollution: these consist of taxes levied on the emission or discharge into the environment of noxious gases, liquids or other harmful substances. Payments for emission permits also qualify as taxes on production, to be recorded at issuance prices at the time of surrender of the permits. They do not include payments made for the collection and disposal of waste or noxious substances by public authorities, which constitute intermediate consumption of enterprises;

g. Taxes on international transactions: these consist of taxes on travel abroad, foreign remittances or similar transactions with non-residents.

D. Subsidies

8.103 ***Subsidies (D3) are current unrequited payments that government units, including non-resident government units, make to enterprises on the basis of the levels of their production activities or the quantities or values of the goods or services that they produce, sell or import***. They are receivable by resident producers or importers. In the case of resident producers they may be designed to influence their levels of production, the prices at which their outputs are sold or the remuneration of the institutional units engaged in production. Subsidies have the same impact as negative taxes on production in so far as their impact on the operating surplus is in the opposite direction

to that of taxes on production.

8.104 Subsidies are not payable to final consumers; current transfers that governments make directly to households as consumers are treated as social benefits. Subsidies also do not include grants that governments may make to enterprises in order to finance their capital formation, or compensate them for damage to their capital assets, such grants being treated as capital transfers.

8.105 In view of accounting for environmental sustainability, countries are encouraged to compile, as supplementary items, data on environmental subsidies in line with the definition provided in chapter IV of the *SEEA Central Framework*.

1. Subsidies on products

8.106 ***Subsidies on products (D31) are subsidies payable per unit of a good or service.*** The subsidy may be a specific amount of money per unit of quantity of a good or service, or it may be calculated ad valorem as a specified percentage of the price per unit. A subsidy may also be calculated as the difference between a specified target price and the market price actually paid by a buyer. A subsidy on a product usually becomes payable when the good or service is produced, sold or imported, but it may also be payable in other circumstances such as when a good is transferred, leased, delivered or used for own consumption or own capital formation.

Import subsidies

8.107 ***Import subsidies (D311) consist of subsidies that are payable on goods when entering the economic territory, or on services being delivered to residents.*** They include implicit subsidies resulting from the operation of a system of official multiple exchange rates. They may also include losses incurred as a matter of deliberate government policy by government trading organizations whose function is to purchase products from non-residents and then sell them at lower prices to residents (see also export subsidies in paragraph 8.109).

8.108 As in the case of taxes on products, subsidies on imported goods do not include any subsidies that may become payable on such goods after they have crossed the frontier and entered into free circulation within the economic territory of the country.

Export subsidies

8.109 ***Export subsidies (D312) consist of subsidies on goods or services that are payable by government when the goods leave the economic territory or when the services are delivered to non-resident units.*** They include the following:

a. Direct subsidies on exports: subsidies payable directly to resident producers when the goods leave the economic territory or the services are delivered to non-residents;

b. Losses of government trading organizations: these consist of losses incurred as a matter of deliberate government policy by government trading organizations whose function is to buy the products of resident enterprises and then sell them at lower prices to non-residents. The difference between the buying and selling prices is an export subsidy (see also paragraph 8.111 (b));

c. Subsidies resulting from multiple exchange rates: these consist of implicit subsidies resulting from the operation of an official system of multiple exchange rates.

Exclusions from export subsidies

8.110 Export subsidies do not include the repayment at the customs frontier of taxes on products previously paid on goods or services while they were inside the economic territory. They also exclude the waiving of the taxes that would be due if the goods were to be sold or used inside the economic territory instead of being exported. General taxes on products such as sales or purchase taxes, VAT, excise taxes or other taxes on products are usually not payable on exports.

Other subsidies on products

8.111 ***Other subsidies on products (D313) consist of subsidies on goods or services produced by resident enterprises, or on imports, that become payable as a result of the production, sale, transfer, leasing or delivery of those goods or services, or as a result of their use for own consumption or own capital formation.*** The most common types are the following:

a. Subsidies on products used domestically: these consist of subsidies payable to resident enterprises in respect of their outputs that are used or consumed within the economic territory;

b. Losses of government trading organizations: these consist of the losses incurred by government trading organizations whose function is to buy and sell the products of resident enterprises. When such organizations incur losses as a matter of deliberate government economic or social policy by selling at lower prices than those at which they purchased the goods, the difference between the purchase and the selling prices should be treated as a subsidy. Entries to the inventories of goods held by such organizations are valued at the purchasers' prices paid by the trading organizations and the subsidies are recorded at the time the goods are sold;

c. Subsidies to public corporations and quasi-corporations: these consist of regular transfers paid to public corporations and quasi-corporations that are intended to compensate for persistent losses (that is, negative operating surpluses) incurred on their productive activities as a result of charging prices that are lower than their average costs of production as a matter of deliberate government economic and social policy. In order to calculate the basic prices of the outputs of such enterprises, it will usually be necessary to assume a uniform ad valorem implicit rate of subsidy on those outputs determined by the size of the subsidy as a percentage of the value of sales plus subsidy.

2. Other subsidies on production

8.112 ***Other subsidies on production (D39) consist of subsidies other than subsidies on products that resident enterprises may receive as a consequence of engaging in production***. Examples of such subsidies are the following:

a. Subsidies on payroll or workforce: these consist of subsidies payable on the total wage or salary bill, or total work force, or on the employment of particular types of persons such as physically handicapped persons or persons who have been unemployed for long periods. The subsidies may also be intended to cover some or all of the costs of training schemes organized or financed by enterprises;

b. Subsidies to maintain business: government support, for example provided during the period of the COVID-19 pandemic to employers and self-employed, to maintain their business, and in case of the employers, to keep their employees on the payroll, with a view to having a quick return to production;

c. Subsidies to reduce pollution: these consist of subsidies intended to cover some or all of the costs of additional processing undertaken to reduce or eliminate the discharge of pollutants into the environment. These subsidies also include subsidies to farmers for not using part of their land in production.

E. Property incomes

1. Defining property income

8.113 ***Property income (D4) is the income receivable by the owner of a financial asset or the owner of a non-produced natural resource or another non-produced non-financial asset in return for providing funds to, or putting the non-financial assets at the disposal of, another institutional unit.*** The income payable for the use of financial assets is called investment income while that payable for the use of a non-produced natural resource or another non-produced non-financial asset is called rent.

8.114 ***Investment income (D41) is the income receivable by the owner of a financial asset in return for providing funds to another institutional unit***. The terms governing the payment of investment income are usually specified in the financial instrument created when the funds are transferred from the creditor to the debtor. Such arrangements are typically made only for a limited period of time, after which the funds must be returned. The period of time may be several months or several years, though the arrangements may be renewed.

8.115 ***Rent (D42) is the income receivable by the owner of a non-produced natural resource or another non-produced non-financial asset (the lessor or landlord) for putting the asset at the disposal of another institutional unit (a lessee or tenant) for use in production.*** The terms under which rent on a non-produced natural resource or another non-produced non-financial is payable are often expressed in a lease. Such ***a lease is an agreement whereby the lessor conveys to the lessee, in return for a payment or series of payments, the right to use an asset for an agreed period of time***. A resource lease may apply to any non-produced natural resource recognized as an asset in the integrated framework of the SNA. For resources such as land it is assumed that, at the end of the resource lease, the land is typically returned to the legal owner in the same state as when the lease started, although the value of the land may have changed due to a change in its regenerative potential to produce future economic benefits. For resources such as mineral and energy resources, they are not all returned to the legal owner at the end of the lease since the purpose of the lease is to permit extraction and disposal of the resource. As the resource may be subject to depletion (or regeneration in the case of renewable resources), in addition to the recording of rents payable/receivable, the depletion borne by the legal owner of the natural resource is recorded separately, as a negative item (or as a positive item in the case of negative depletion for renewable resources regarding which the natural growth is larger than the extraction). For more information, see chapter 27 on Contracts, leases, licenses and permits.

8.116 The regular payments made by the lessees of non-produced natural resources or other non-produced non-financial assets, such as mineral and energy resources are often described as royalties, but they are treated as rent in the integrated framework of the SNA. The term "rent" is reserved in the integrated framework for rent on non-produced natural resources or other non-produced non-financial assets, payments under operating leases being described as "rentals".

8.117 Property incomes are classified in the following way in the sequence of economic accounts:

Investment income

- Interest and similar returns
- Income on equity
  - Dividends
  - Withdrawals from income of quasi-corporations
  - Reinvested earnings on foreign direct investment
- Investment income disbursements
  - Investment income attributable to insurance policyholders
  - Investment income payable on pension and non-pension entitlements
  - Imputed investment income attributable to the surplus/shortfall in defined benefit pension funds
  - Investment income attributable to investment fund shareholders

Rent

Each of these items is described in more detail below.

8.118 Table 8.8 shows an expansion of table 8.2 to include the details of property income payable and receivable.

Table 8.8: The allocation of earned income account - property income – expenditures

Expenditures

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
D1	Remuneration of employees							6		6
D2	Taxes on production and imports									0
D3	Subsidies									0
D4	Property income	134	168	42	41	6	391	44		435
D41	Investment income	103	168	35	14	6	326	44		370
D411	Interest and similar returns	56	106	35	14	6	217	13		230
D412	Income on equity	47	15				62	31		93
D4121	Dividends	39	15				54	13		67
D4122	Withdrawals from income of quasi-corporations	8	0				8	4		12
D4123	Reinvested earnings on foreign direct investment	0	0				0	14		14
D413	Investment income disbursements	0	47				47	0		47
D4131	Investment income attributable to insurance policy holders		25				25	0		25
D4132	Investment income payable on pension entitlements		8				8	0		8
D4133	Investment income attributable to the surplus/shortfall in defined benefit pension funds	0	0	0		0	0	0		0
D4134	Investment income attributable to investment fund share holders		14				14	0		14
D42	Rent	31	0	7	27	0	65			65
D42dep (-)	Depletion borne by the legal owner	- 18			0		- 18			- 18
B5g	Balance of earned incomes, gross / National income, gross	248	27	216	1 381	7	1 879			1 879
B5n	Balance of earned income, net / National income, net	61	15	189	1 358	4	1 627			1 627

Table 8.8 (cont): The allocation of earned income account - property income – revenues

Revenues

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
B2g	Operating surplus, gross	292	46	39	84	6	467			467
B3g	Mixed income, gross				61		61			61
B2n	*Operating surplus, net*	105	34	12	69	3	223			223
B3n	*Mixed income, net*				53		53			53
D1	Remuneration of employees				1 154		1 154	2		1 156
D2	Taxes on production and imports			235			235			235
D3	Subsidies			- 44			- 44			- 44
D4	Property income	72	149	46	123	7	397	38		435
D41	Investment income	55	146	22	102	7	332	38		370
D411	Interest and similar returns	33	106	14	49	7	209	21		230
D412	Income on equity	14	32	7	23	0	76	17		93
D4121	Dividends	10	25	5	13	0	53	14		67
D4122	Withdrawals from income of quasi-corporations			2	7		9	3		12
D4123	Reinvested earnings on foreign direct investment	4	7	0	3	0	14	0		14
D413	Investment income disbursements	8	8	1	30	0	47	0		47
D4131	Investment income attributable to insurance policy holders	5	0	0	20	0	25	0		25
D4132	Investment income payable on pension entitlements				8		8	0		8
D4133	Investment income attributable to the surplus/shortfall in defined benefit pension funds		0				0	0		0
D4134	Investment income attributable to investment fund share holders	3	8	1	2	0	14	0		14
D42	Rent	17	3	24	21	0	65			65
D42dep (-)	Depletion borne by the legal owner			- 18			- 18			- 18

2. Interest and similar returns

8.119 ***Interest and similar returns (D411) is a form of investment income or interest-like income that is receivable by the owners of certain kinds of financial assets, namely: deposits, debt securities, loans and other accounts receivable and some similar instruments in the case of Islamic finance, for putting the financial asset at the disposal of another institutional unit. Income on SDR holdings and allocations is also treated as interest and similar returns.*** The financial assets giving rise to interest and similar returns are all claims of creditors over debtors. Creditors lend funds to debtors that lead to the creation of one or other of the financial instruments listed above. The amount the debtor owes the creditor is known as the principal. Over time, the amount due to the creditor declines as the debt is repaid and increases as interest and similar returns accrues. The balance at any time is referred to as the principal outstanding.

8.120 Interest and similar returns may be a predetermined sum of money or a fixed or variable percentage of the principal outstanding, or, in the case of Islamic finance, a pre-determined share of profit related to the sourcing or the use of certain types of funds. If some or all of the interest and similar returns accruing to the creditor is not paid during the period in question, it may be added to the amount of the principal outstanding or it may constitute an additional, separate liability incurred by the debtor. However, the interest and similar returns may not necessarily be due for payment until a later date and sometimes not until the loan, or other financial instrument matures.

8.121 All fees payable to the owners of securities used for securities lending, to the owners of gold used for gold loans (whether from physical gold or unallocated gold accounts), and to the owners of crypto assets without a corresponding liability designed to act as a medium of exchange used for crypto lending, should be recorded by convention as interest. The interest may need to be adjusted for implicit financial services on loans and deposits, if the unit providing the loan is classified as a financial corporation.

8.122 The guidance below is mainly focusing on interest as commonly known. Specific types of interest-like income, as practiced in Islamic finance, are further elaborated in chapter 26.

The accrual basis of recording

8.123 Interest and similar returns is recorded on an accrual basis, that is, interest and similar returns is recorded as accruing continuously over time to the creditor on the amount of principal outstanding. The interest and similar returns accruing is the amount receivable by the creditor and payable by the debtor. It may differ not only from the amount of interest and similar returns actually paid during a given period but also the amount due to be paid within the period. Some financial instruments are drawn up in such a way that the debtor is obliged to make regular payments of interest and similar returns, period by period, as the interest, or similar returns, accrues but in other cases there may be no such requirement. As explained in chapter 25 on Selected issues in financial instruments, there are many different kinds of financial instruments and new instruments are continually being developed. Interest and similar returns may therefore be paid in various different ways, not always explicitly described as interest, or interest-like income. However, streams of net settlement payments under a swap or forward rate agreement contract (possibly described as "interest" in the contract) are not considered as property income but are to be recorded as transactions in financial derivatives in the financial account (see paragraphs 12.122 to 12.125).

The recording of negative interest and interest under reverse transactions

8.124 In some periods of economic distress, negative interest rates can be observed, not only on central bank deposits but also on deposits issued by other financial corporations and on government debt securities. In these cases, the interest payable is to be recorded as a negative expenditure, and not as positive revenue.

8.125 In the case the legal ownership of securities changes under a reverse transaction, the economic owner of securities continues recording the accrual of interest and dividends on the securities, including when the security is further on-sold to a third party. If the reverse transaction covers the period when interest and dividends are payable, and during that period the taker has on-sold the asset, then the security taker (borrower) is typically obliged to compensate the security provider (lender). In such cases, it is recommended to record positive credit in interest, or dividends, for the security lender, and negative credit in interest, or dividends, for the security borrower,

Interest payable and receivable on loans and deposits

8.126 As explained in chapter 7 on Production account, the amounts of interest on loans and deposits payable to and receivable from financial corporations include a margin that represents an implicit payment for the services provided by the financial corporations in providing loans and accepting deposits. The actual payments or receipts to or from financial corporations, described as bank interest, need to be partitioned so that SNA interest and the service charges may be recorded separately. The amounts of SNA interest paid by borrowers to financial corporations are less than bank interest by the estimated values of the charges payable, while the amounts of SNA interest receivable by depositors is higher than bank interest by the amount of the service charge payable. The values of the charges are recorded as sales of services in the production accounts of financial corporations and as

purchases of services in the accounts of their customers

8.127 If bank interest is unpaid, it must be the case that both SNA interest and the service charge are unpaid. In other words, the amount of principal outstanding increases by both the amount of SNA interest unpaid plus the unpaid service charge.

Interest payable on debt securities

8.128 Certain financial instruments, for example, bills and zero coupon bonds, are such that the debtor is under no obligation to make any payments to the creditor until the asset matures. In effect, no interest becomes due for payment until the end of the asset's life at which point the debtor's liability is discharged by a single payment covering both the amount of the funds originally provided by the creditor and the interest accumulated over the entire life of the asset. In such cases the amount of interest payable over the life of the security is derived as the difference between the value at which the instrument is acquired and its value when it matures.

Further elaboration

8.129 Chapter 25 on Selected issues in financial instruments contains a section detailing how all the transactions and other flows associated with financial instruments are to be recorded in the accounts. It contains, in particular, specific recommendations on how interest on each of the relevant financial instruments is to be calculated.

Nominal and real interest

8.130 When a debtor discharges the principal by making payments equal in money value to the funds borrowed plus the interest accruing at the agreed rate over the time the debt exists, the associated interest payments are described as "nominal". Such interest payments do not represent the "real" return to the creditor when, as a result of inflation, the purchasing power of the funds repaid is less than that of the funds borrowed. In situations of chronic inflation the nominal interest payments demanded by creditors typically rise in order to compensate them for the losses of purchasing power that they expect when their funds are eventually repaid.

8.131 In practice, the interest recorded in the allocation of earned income account is not partitioned in this way. The interest recorded is always the amount of nominal interest receivable or payable (plus or minus the charges for services of financial intermediaries for which no explicit charges are made, when relevant). However, the information needed to calculate real interest is provided within the sequence of economic accounts as a whole since the real holding losses incurred by creditors are recorded in the revaluation account.

3. Income on equity

Dividends

8.132 Corporations obtain funds by issuing shares in their equity that entitle the holders to a proportion of both distributed profits and the residual value of the assets of the corporation in the event of its liquidation. Shareholders are the collective owners of a corporation.

8.133 ***Dividends (D4121) are of the earnings distributed to the owners of corporate equity for placing funds at the disposal of corporations.*** Raising equity capital through the issue of shares is an alternative to borrowing as a way of raising funds. In contrast to loan capital, however, equity capital does not give rise to a liability that is fixed in monetary terms and it does not entitle the holders of shares of a corporation to a fixed or predetermined income.

8.134 Just as corporations are understood in the sequence of economic accounts of the SNA to cover a set of institutional units engaged in production that may be described by different names such as private or public corporations, private or public companies, cooperatives and limited liability partnerships, so dividends must also be understood to cover all distributions of profits by corporations to their shareholders or owners, by whatever name they are called. Dividends may occasionally take the form of an issue of shares, but this excludes issues of bonus shares

that simply represent a reclassification between own funds, reserves and undistributed profits.

8.135 Share buybacks are not treated as the distribution of dividends. They are recorded as financial transactions, in these cases the purchases of own shares by the relevant corporations. For the treatment of dividends under reverse transactions, see paragraph 8.125.

Time of recording

8.136 Although dividends represent a part of income that has been generated over a substantial period, often six or twelve months, dividends are not recorded in the sequence of economic accounts on a strict accrual basis. For a short period after a dividend is declared but before it is actually payable, shares may be sold "ex dividend" meaning that the dividend is still payable to the owner at the date the dividend was declared and not to the owner on the date payable. A share sold "ex dividend" is therefore worth less than one sold without this constraint. The time of recording of dividends in the sequence of economic accounts is the point at which the share price starts to be quoted on an ex dividend basis rather than at a price that includes the dividend. In some cases, such as when the equity is unlisted, the ex-dividend date may not be known, and the payment date can be used.

Super dividends

8.137 Although dividends are notionally paid out of the current period's operating surplus, corporations often smooth the payments of dividends, often paying out rather less than operating surplus but sometimes paying out a little more, especially when the operating surplus itself is very low. For practical reasons, no attempt is made in the sequence of economic accounts to align dividend payments with earnings except in one circumstance. The exception occurs when the dividends are disproportionately large relative to the recent level of dividends and earnings. In order to determine whether the dividends are disproportionately large, it is helpful to introduce the concept of distributable income. ***Distributable income of a corporation is equal to entrepreneurial income, plus all current transfers receivable, less all current transfers payable and less the adjustment for the change in pension and non-pension entitlements relating to the pension or other social insurance scheme of that corporation.*** From this it is possible to look at the ratio of dividends to distributable income over the recent past and assess the plausibility that the current level of dividends declared is in line with past practice, accepting some degree of smoothing from year to year. If the level of dividends declared is greatly in excess of this, the excess should be treated as a financial transaction, specifically the withdrawal of owners' equity from the corporation. There is more discussion on the case of publicly controlled corporations in chapter 30 on General government and the public sector.

8.138 This treatment applies to all dividends paid by corporations, whether incorporated or quasi-corporate, to their direct owners. However, an exception is made for foreign direct investment enterprises. For these enterprises, all dividends payable to direct investors are treated as earned income, including dividends sourced from accumulated reserves. Distributions beyond that would not be included in dividends. Such distributions could be funded, for example, from the sale of financial or non-financial assets (other than cash) of the corporation, and should be recorded as a withdrawal of equity in the financial account). (For a definition of foreign direct investment enterprises, see paragraph 8.143.)

8.139 As a consequence of the above difference between the treatment of super dividends for domestically controlled corporations, as compared to the treatment of such dividends for foreign direct investment enterprises, the recording of super dividends, and the recording of dividends more generally may come across as being inconsistent. However, this was considered acceptable, as the current guidance also restricts the recording of retained earnings to foreign direct investment enterprises, as discussed below. It may be useful, however, to separately identify payments from accumulated reserves to foreign direct investors for their analytical value and for reasons of comparability with domestic super dividends. Countries are therefore encouraged to compile additional supplementary data on dividends distributed by foreign direct investment enterprises that are sourced from accumulated retained savings or other reserves.

Withdrawals of income from quasi-corporations

8.140 Withdrawal of income from a quasi-corporation consists of that part of distributable income that the owner withdraws from the quasi-corporation. The income that the owners of quasi-corporations withdraw from them is analogous to the income withdrawn from corporations by paying out dividends to their shareholders. It is therefore treated as property income accruing to the owners of quasi-corporations. The withdrawal of income by the owners of quasi-corporations needs to be identified in order to be able to establish a full set of accounts for the unit and to treat it as an institutional unit separate from that of its owner.

8.141 Withdrawals of income from a quasi-corporation do not include withdrawals of funds realized by the sale or disposal of the quasi-corporation's assets: for example, the sale of inventories, fixed assets, land or other non-produced assets. Such sales would be recorded as disposals in the capital account of the quasi-corporation and the transfer of the resulting funds would be recorded as a withdrawal from the equity of quasi-corporations in the financial account of the quasi-corporation and as a receivable by its owner(s). Similarly, funds withdrawn by liquidating large amounts of accumulated retained savings or other reserves of the quasi-corporation, including those built up out of provisions for depreciation, are treated as withdrawals from equity. This situation corresponds to the treatment of super dividends payable by domestically controlled listed enterprises described immediately above.

8.142 Conversely, any funds provided by the owner(s) of a quasi-corporation for the purpose of acquiring assets or reducing its liabilities should be treated as additions to its equity. Just as there cannot be a negative distribution from the distributable income of corporations in the form of negative dividends, it is not possible to have a negative distribution from the distributable income of quasi-corporations in the form of negative withdrawals. However, if the quasi-corporation is owned by government, and if it runs a persistent operating deficit as a matter of deliberate government economic and social policy, any regular transfers of funds into the enterprise made by government to cover its losses should be treated as subsidies, as explained in paragraph 8.111 (c) above.

Reinvested earnings on foreign direct investment

8.143 As explained in chapter 33 on Transactions and positions between residents and non-residents, a foreign direct investment enterprise is a corporate or unincorporated enterprise in which a foreign investor has made a foreign direct investment. A foreign direct investment enterprise may be either:

a. The (unincorporated) branch of a non-resident corporate or unincorporated enterprise: this is treated as a quasi-corporation; or

b. A corporation in which at least one foreign investor (which may, or may not, be another corporation) owns sufficient shares to have an effective voice in its management.

8.144 Actual distributions may be made out of the distributable income of foreign direct investment enterprises in the form of dividends or withdrawals of income from quasi-corporations. The payments made in these ways to foreign direct investors are recorded in the sequence of economic accounts and in the balance of payments as international flows of investment income. However, both systems also require the retained earnings of a foreign direct investment enterprise to be treated as if they were distributed and remitted to foreign direct investors in proportion to their ownership of the equity of the enterprise and then reinvested by them by means of additions to equity in the financial account. The imputed remittance of these retained earnings is classified in the sequence of economic accounts as a form of income on equity that is separate from, and additional to, any actual payments of dividends or withdrawals of income from quasi-corporations.

8.145 The rationale behind this treatment is that since a foreign direct investment enterprise is, by definition, subject to control, or influence, by a foreign direct investor or investors, the decision to retain some of its earnings within the enterprise must represent a deliberate investment decision on the part of the foreign direct investor(s). In practice, the great majority of foreign direct investment enterprises are subsidiaries of foreign corporations or the unincorporated branches of foreign enterprises, which are completely controlled by their parent corporations or owners.

8.146 Retained earnings of a corporation or quasi-corporation are equal to the distributable income less the dividends payable, or withdrawals from income of the corporation or quasi-corporation respectively. If the foreign direct investment enterprise is wholly owned by a single foreign direct investor (for example, a branch of a foreign enterprise), the whole of the retained earnings is deemed to be remitted to that investor and then reinvested, in

which case the saving of the enterprise must be zero. When a foreign direct investor owns only part of the equity of the foreign direct investment enterprise, the amount that is deemed to be remitted to, and reinvested by, the foreign investor would be the direct investor's proportion (in terms of equity held) of distributable income, less amounts declared for dividend distribution to the foreign direct investor, or less the withdrawals from income of the quasi-corporation by the foreign direct investor.

Retained earnings of domestic enterprises

8.147 Recommendations have been made to extend the treatment of distributing retained earnings to the owners of other corporations, in particular of public corporations. However, these recommendations have not yet been implemented in the sequence of economic accounts. Instead, countries are encouraged to compile supplementary information on an alternative recording of retained earnings for all corporations, by treating these retained earnings as being distributed and subsequently reinvested. A possible change in the guidance, after having gained more experience on this alternative recording, has been put on the 2025 SNA research agenda; see Annex 5.

4. Investment income disbursements

Investment income attributable to insurance policyholders

8.148 Investment income attributable to insurance policyholders should be divided between holders of non-life and life insurance policies.

8.149 For non-life insurance policies, the insurance corporation has a liability towards the policyholder of the amount of the actual premium deposited with the corporation but not yet earned, the value of any claims due but not yet paid and a reserve for claims not yet notified or notified but not yet settled. Set against this liability, the insurance corporation holds technical reserves. The investment income on these reserves, excluding any holding gains and losses, is treated as income attributable to the policyholders, then distributed to the policyholders in the allocation of earned income account and paid back to the insurance corporation as a premium supplement in the income transfers other than social transfers in kind account. The reserves concerned are those where the insurance corporation recognizes a corresponding liability to the policyholders.

8.150 For an institutional unit operating a standardized guarantee scheme against fees, there may also be investment income earned on the technical reserves of the scheme and this should also be shown as being distributed to the units paying the fees (who may not be the same units which stand to benefit from the guarantees) and treated as supplementary fees in the income transfers other than social transfers in kind account.

8.151 For life insurance policies and annuities, the insurance corporations have liabilities towards the policyholders and annuitants equal to the present value of future claims. Set against these liabilities, the insurance corporations have funds belonging to the policyholders consisting of bonuses declared for with-profits policies as well as provisions for both policyholders and annuitants of the payment of future bonuses and other claims. These funds are invested in a range of financial assets and possibly non-financial assets such as real estate property and land. The insurance corporations receive property income from the financial assets and land, and earn net operating surpluses from the renting or leasing of residential and other buildings. In addition they make holding gains or losses on the assets held. The bonuses declared to holders of life insurance policies should be recorded as investment income receivable by the policyholders (resident and possibly non-resident households) and are treated as premium supplements paid by the policyholders to the insurance corporations. As with interest and dividends, the source of the investment income payable may not be investment income itself, but for the integrated framework of the SNA, the decisive criterion for recording this as investment income is that of the recipient who regards these payments as the rewards for putting financial assets at the disposal of the insurance corporation.

8.152 The investment income attributed to life insurance policyholders is recorded as payable by the insurance company and receivable by households in the allocation of earned income account. This amount carries through automatically to saving without the need of an adjustment item as is the case for changes in pension and non-pension entitlements. The relevant investment income is treated as premium supplements and so forms part of the premiums less service charges, less claims, recorded in the financial account as payable by households and receivable by insurance corporations as changes in life insurance and annuity entitlements.

8.153 Unlike the case of non-life insurance or pensions, the amount carries through to saving and is then recorded as a financial transaction, specifically an increase in the liabilities of life insurance corporations, in addition to actual premiums less the service charge offset by claims payable.

Investment income payable on pension and non-pension entitlements

8.154 As explained in chapter 24 on Insurance and pensions, pension entitlements arise from one of two different types of pension schemes. These are defined contribution schemes (sometimes described as money purchase schemes) and defined benefit schemes.

8.155 A defined contribution scheme is one where contributions by both employers and employees are invested on behalf of the employees as future pensioners. No other source of funding of pensions is available and no other use is made of the funds. The investment income payable on defined contribution entitlements is equal to the investment income on the funds, excluding any holding gains and losses, plus any net operating surplus earned by renting land or buildings owned by the fund.

8.156 A defined benefit scheme is one where the benefits payable are defined in terms of a formula. The formula often takes the form of a link to final salary (hence the alternative terminology final salary schemes) or average salary over some defined period. The formula may be expressed in many ways including, for example, a variation on a defined contribution scheme such as the growth in earnings of the funds or a minimum percentage growth.

8.157 Because the benefits are calculated according to a formula, it is possible to determine the level of entitlements necessary at any point in time to meet future obligations. The value of the entitlements is the present value of all future benefits, calculated using actuarial assumptions about life lengths and economic assumptions about the interest or discount rate. The present value of the future benefits existing at the start of the year increases because the date when the entitlements become payable has become one year nearer. The amount of the increase is not affected by whether the pension scheme actually has sufficient funds to meet all the obligations nor by the type of increase in the funds, whether it is investment income or holding gains, for example.

8.158 For defined benefit schemes, the investment income payable on pension entitlements is calculated as the unwinding of the pension entitlements using the discount rate used to calculate these entitlements. The source of this investment income, be it interest, dividends or holding gains, is irrelevant for determining the investment income payable on pension entitlements.

Imputed investment income attributable to the surplus/shortfall in defined benefit pension funds

8.159 In the case where a pension sponsor (for example, an employer) is responsible for meeting the liabilities of a defined benefit pension scheme in case of any shortfall, the shortfall should be recorded as a claim of the pension fund on the pension sponsor, or a negative claim in case of a surplus. The imputed investment income on this claim is equal to the shortfall (or excess) in property income payable by the pension fund (i.e., the investment income payable on defined benefit pension entitlements (see paragraph 8.158) minus the property income receivable on the assets accumulated by the pension fund. The income flow is recorded as a (negative) payable and a (negative) receivable between the pension sponsor and the pension fund.

Investment income attributed to investment fund shareholders

8.160 Investment income attributed to holders of shares or units in investment funds (including mutual funds and unit trusts) is shown as two separate items. The first of these is the dividends distributed to investment fund shareholders. The second is retained earnings attributed to investment fund shareholders.

8.161 The dividend component is recorded in exactly the same manner as dividends for individual corporations, as described above. The retained earnings component is recorded using the same principles as those described for foreign direct investment enterprises. That is to say, the remaining retained earnings are distributed to the shareholders (leaving the investment fund with no saving) and are reinjected into the fund by the shareholders in a transaction recorded in the financial account.

8.162 The investment income payable to investment fund shareholders is recorded without any deduction of costs incurred by the fund in its day-to-day operations. These financial services, including those paid by the investment fund on behalf of the shareholders, are recorded as being provided directly by the original service providers to the shareholders. This may also include implicit financial services on loans and deposits.

5. Rent

Rent distinguished from rentals

8.163 The distinction between rent and the rentals receivable and payable under operating leases is basic to the integrated framework of the SNA, as rent is a form of property income and rentals are treated as sales or purchases of services. Rentals are payments made under an operating lease to use a fixed asset belonging to another unit where that owner has a productive activity in which the fixed assets are maintained, replaced as necessary and made available on demand to lessees. Rent is a payment made under a lease for the use of a non-produced natural resource or another non-produced non-financial asset. Not only is the type of asset leased different as between rent and rentals, so is the nature of the lease. The distinction between different types of leases is explained in chapter 27 on Contracts, leases, licenses and permits.

Rent

8.164 ***Rent (D42) is the income receivable by the owner of a non-produced natural resource or another non-produced non-financial asset (the lessor or landlord) for putting the asset at the disposal of another institutional unit (a lessee or tenant) for use in production.*** Three particular cases of rent are considered: rent on land, rent on mineral and energy resources, and rent on non-produced non-financial assets other than natural resources. Rent on non-produced natural resources other than land and mineral and energy resources follows the pattern laid out by the first two instances.

8.165 In the case on rent on natural resources, part of the rent represents an implicit compensation for the decrease in value of the natural resource due to the extraction of the underlying resource. The part of depletion borne by the lessor should be recorded as a negative item, under rent, in the allocation of primary income account of the lessor, typically general government, and the lessee. It reflects the fact that the rent earned by the lessor includes the lessor's share of total depletion which must be deducted to appropriately measure the depletion-adjusted saving of the lessor. Another way of viewing this entry is to consider that the rent earned by the lessor must be recorded net of depletion (i.e., depletion-adjusted rent) in the derivation of depletion-adjusted saving. This recording is especially relevant in the case of non-renewable mineral and energy resources. However, it may also hold for the regenerative potential of biological resources yielding once-only products, albeit that in these cases depletion can also be negative.

8.166 Rent should be clearly distinguished from "resource rent" or "natural resource rent". The latter represents the surplus value accruing to the extractor of an asset after all costs have been taken into account; see paragraph 4A.32.

Rent on land

8.167 Rent on land is recorded as accruing continuously to the landowner throughout the period of the contract agreed between the landowner and the tenant. The rent recorded for a particular accounting period is equal to the value of the accumulated rent payable over that period of time, as distinct from the amount of rent due to be paid during that period or the rent actually paid.

8.168 Rent may be paid in cash or in kind. Under share-cropping or similar schemes, the value of the rent payable is not fixed in advance in monetary terms and is measured by the value at basic prices of the crops that the tenants are obliged to provide to the landowner under the contract between them. Rent on land also includes the rent payable to the owners of inland waters and rivers for the right to exploit such waters for recreational or other purposes, including fishing.

8.169 A landowner may be liable to pay land taxes or incur certain maintenance expenses solely as a consequence of

owning the land. By convention, such taxes or expenses are treated as payable by the tenant who is deemed to deduct them from the rent that he or she would otherwise be obliged to pay to the landowner. Rent reduced in this way by taxes or other expenses for which the landowner is liable is described as "after-tax rent". By adopting the convention that the tenant pays only the after-tax rent, the taxes or expenses are recorded in the production or generation of earned income accounts of the tenant. This treatment does not change the income of the tenant. The convention avoids the necessity to create a notional enterprise for the landowner as the lessor.

8.170 Rentals payable on buildings or other structures are treated as purchases of services. In practice, however, a single payment may cover both rent and rentals when an institutional unit rents land that consists of land improvements and bare land and may include any buildings situated on it in a single contract, or lease, in which the two kinds of payments are not differentiated from each other. For example, a farmer may rent a farmhouse, farm buildings, cultivated and grazing farmland in a contract in which only a single payment is required to cover all four. If there is no objective basis on which to split the payment between rent on land and rental on the buildings, it is recommended to treat the whole amount as rent when the value of the grazing land is believed to exceed the value of the buildings and cultivated land, and as a rental otherwise.

Rent on mineral and energy resources

8.171 The ownership of mineral and energy resources depends upon the way in which property rights are defined by law and also on international agreements in the case of deposits below international waters. In some cases the assets may belong to the owner of the ground below which the deposits are located but in other cases they may belong to a local or central government unit.

8.172 The owners of the assets, whether private or government units, may grant leases to other institutional units permitting them to extract such deposits over a specified period of time in return for the payment of rent. These payments are essentially rent that accrues to owners of the assets in return for putting them at the disposal of other institutional units for specified periods of time and are treated as such in the integrated framework of the SNA. The rent may take the form of periodic payments of fixed amounts, irrespective of the rate of extraction or, more commonly, they may be a function of the quantity or volume of the asset extracted. Enterprises engaged in exploration may make payments to the owners of surface land in exchange for the right to make test drillings or investigate by other means the existence and location of mineral and energy resources. Such payments are also to be treated as rent even though no extraction is taking place.

8.173 Any payments made by the user/extractor of a non-produced natural resource to the owner of the natural resource, which are linked to the use/extraction of that resource, in particular to the quantity and/or value of that resource, should be recorded as rent. These would include, for example, royalties, sur-taxes, and permits. However, payments that are paid by the user/extractor on the same basis as other corporations who are not users/extractors of natural resources (e.g., standard rate corporation taxes, dividends, payments for services) should not be recorded as rent.

Rent on other non-produced non-financial assets

8.174 Payments of rent may also refer to payments for getting the rights to use other non-produced non-financial assets. An example concerns payments for getting the rights to use marketing assets. Another example, related to the digitalization of the economy, concerns payments to, for example, households for giving explicit consent to monitor their behavioural patterns on the internet, and thereby providing the relevant corporations the possibility to collect personal data; see paragraph 22.28.

Chapter 9: Transfer income accounts

A. Introduction

9.1 This chapter describes two accounts that show how income is redistributed between institutional units by means of the payments and receipts of current transfers. This redistribution represents the second stage in the process of income distribution as shown in the sequence of economic accounts of the SNA. The two accounts are the income transfers other than social transfers in kind account and the social transfers in kind account.

9.2 The income transfers other than social transfers in kind account shows how the balance of earned incomes of an institutional unit or sector is transformed into its disposable income by the receipt and payment of current transfers excluding social transfers in kind.

9.3 The social transfers in kind account takes the process of income redistribution one stage further. It shows how the disposable incomes of households, non-profit institutions serving households (NPISHs) and government units are transformed into their disposable incomes adjusted for social transfers in kind, by the receipt and payment of social transfers in kind. Non-financial and financial corporations are not involved in this process.

9.4 Much of this chapter is concerned with the detailed definition, description and classification of the various types of current transfers recorded in the income transfers other than social transfers in kind account and the social transfers in kind account. As part of this description, there is discussion of the composition of social insurance schemes and their role as the recipients of social contributions and dispensers of social benefits.

9.5 Understanding the difference between four related concepts is crucial to an appreciation of the two accounts described in this chapter. These terms are social insurance, social security, social assistance and social transfers in kind. These are explained very briefly below and in greater detail in later parts of the chapter.

9.6 Social insurance schemes are schemes in which social contributions are paid by employees, self-employed or others, or by employers on behalf of their employees, in order to secure entitlement to social insurance benefits, in the current or subsequent periods, for the employees, self-employed or other contributors, their dependants or survivors. The social benefits payable by social insurance schemes are of two kinds, pensions and other benefits such as medical, education, housing or unemployment benefits. Pensions are always paid in cash; non-pension benefits may be payable in cash or in kind.

9.7 Two main types of social insurance schemes may be distinguished:

- The first consists of social security schemes covering the entire community, or large sections of the community, that are imposed, controlled and financed by government units. Pensions payable under these schemes may or may not be related to levels of salary of the beneficiary or history of employment. Non-pension benefits are less frequently linked to salary levels.
- The second type consists of other social insurance schemes. These schemes mainly derive from an employer-employee relationship in the provision of pension entitlement that is part of the conditions of employment and where responsibility for the provision of benefits does not devolve to general government under social security provisions. Such schemes may also relate to employer-independent schemes, provided to, for example, certain groups of self-employed persons.

9.8 Social assistance benefits in cash are current transfers payable to households by government units or NPISHs to meet the same needs as social insurance benefits but which are not made under a social insurance scheme requiring participation usually by means of social contributions.

9.9 Social transfers in kind consist of social security benefits payable in kind and social assistance benefits payable in kind.

1. The income transfers other than social transfers in kind account

9.10 Apart from the balance of earned incomes, the balancing item carried forward from the earned income accounts, and disposable income, the balancing item on the income transfers other than social transfers in

kind account, all the entries in the income transfers other than social transfers in kind account consist of current transfers. ***Transfers are transactions in which one institutional unit provides a good, service or asset to another unit without receiving from the latter any good, service or asset in return as a direct counterpart***. Transfers are separated into current transfers and capital transfers. ***Capital transfers (D9) are unrequited transfers, either in cash or in kind, linked to the acquisition, disposal or transfer of an asset (other than cash or inventories); or where a liability is forgiven or assumed; or where the transfers are intended to address accumulated losses incurred over a multi-year period.*** Capital transfers are often large and irregular but neither of these are necessary conditions for a transfer to be considered a capital rather than a current transfer. Other transfers are described as current. ***Current transfers (D5+D6+D7) are unrequited transactions between two parties where one party provides a good, service or cash to the other party, with no expectation of anything of economic value in exchange. Unlike capital transfers, they are not linked to the acquisition or disposal of an asset, either financial or non-financial (other than cash and inventories).*** The concept of a transfer is explained in more detail in section B below.

9.11 Table 9.1 shows the concise form of the income transfers other than social transfers in kind account identifying the main kinds of current transfers. Current transfers may take place between resident and non-resident units as well as between resident institutional units.

9.12 The current transfers payable by an institutional unit or sector are recorded on the left-hand side of the account under expenditures. For example, in table 9.1, current taxes on income, wealth etc. payable by the household sector are recorded at the intersection of the row for this item and the expenditures column for the household sector. The current transfers receivable by an institutional unit or sector are recorded on the right-hand side of the account under revenues. For example, social benefits other than social transfers in kind receivable by the household sector are recorded at the intersection of the row for this item and the revenues column for the household sector.

9.13 In accordance with the general accounting rules of the sequence of economic accounts, the entries in the account, apart from the balancing items, refer to amounts payable and receivable. These may not necessarily coincide with the amounts actually paid or received in the same accounting period. Any amounts payable and not paid or receivable and not received are recorded in the financial account, under other accounts receivable/payable.

9.14 Three main kinds of current transfers are distinguished in the income transfers other than social transfers in kind account:

- Current taxes on income, wealth, etc.;
- Social contributions and benefits;
- Other current transfers.

Their general nature and the purposes they serve are summarized in the following paragraphs.

Current taxes on income, wealth, etc.

9.15 ***Current taxes on income, wealth, etc. (D5) are taxes which mainly consist of taxes on the incomes of households or profits of corporations and of taxes on wealth that are payable regularly every tax period (as distinct from capital taxes levied infrequently)***. In table 9.1, current taxes on income, wealth, etc. receivable appear under revenues for the general government sector and possibly the rest of the world, while taxes payable appear under expenditures for the household and non-financial and financial corporation sectors, and possibly for the non-profit institutions serving households (NPISHs) sector and the rest of the world.

Social contributions and benefits

9.16 ***Social contributions are actual and imputed contributions payable to social insurance schemes in order for a designated beneficiary to be entitled to receive the social benefits covered by the scheme.*** Social contributions may be made by employers on behalf of their employees. As such they form part of

remuneration of employees and are included in the balance of earned income of households. In the income transfers other than social transfers in kind account, these contributions together with payments made by households themselves in their capacity as employed, self-employed or unemployed persons, are recorded as payable by households and receivable by the units responsible for the social insurance schemes. Social contributions may be receivable by a unit in any sector in their capacity as providing a social insurance scheme to their employees (even exceptionally households if in their capacity as unincorporated enterprises they run a social insurance scheme for their employees) or by a third-party unit designated as the institution responsible for administering the scheme. Most contributions, however, are likely to be recorded under revenues for the general government sector, including social security funds, and insurance corporations and pension funds in the financial corporations' sector. Social contributions are recorded under expenditures only for households, either resident or non-resident.

9.17 ***Social benefits are current transfers receivable by households intended to provide for the needs that arise from certain events or circumstances, for example, sickness, unemployment, retirement, housing, education or family circumstances.*** Social benefits may be provided under social insurance schemes or by social assistance.

9.18 Social insurance benefits in kind provided by employers are treated as if they were paid in cash and included in the income transfers other than social transfers in kind account. If this were not so, the purchase of the goods and services concerned would have to be shown as incurred by employers but these products are not intermediate consumption and enterprises cannot have final consumption. However, social insurance benefits in kind provided under general social security schemes and all social assistance benefits in kind constitute social transfers in kind and are therefore included only in the social transfers in kind account. In table 9.1, social benefits, except social transfers in kind, are recorded under revenues for the household sector, or the rest of the world, if it concerns non-resident households, and may, in principle, be recorded under expenditures for any sector operating a social insurance scheme in its capacity as an employer.

Table 9.1: The income transfers other than social transfers in kind account - concise form – expenditures

Expenditures

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
	Current transfers	98	277	248	582	7	1 212	17		1 229
D5	Current taxes on income, wealth, etc.	24	10	0	178	0	212	1		213
D61	Social contributions less service charges				333		333	0		333
D62	Social benefits other than social transfers in kind	62	205	112	0	5	384	0		384
D7	Other current transfers	12	62	136	71	2	283	16		299
B6g	Disposable income, gross	222	25	335	1 219	40	1 841			1 841
B6n	*Disposable income, net*	35	13	308	1 196	37	1 589			1 589

Table 9.1 (cont): The income transfers other than social transfers in kind account - concise form – revenues

Revenues

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
B5g	Balance of earned incomes, gross / National income, gross	248	27	216	1 381	7	1 879			1 879
B5n	*Balance of earned income, net / National income, net*	61	15	189	1 358	4	1 627			1 627
	Current transfers	72	275	367	420	40	1 174	55		1 229
D5	Current taxes on income, wealth, etc.			213			213	0		213
D61	Social contributions less service charges	66	213	50	0	4	333	0		333
D62	Social benefits other than social transfers in kind				384		384	0		384
D7	Other current transfers	6	62	104	36	36	244	55		299

Other current transfers

9.19 ***Other current transfers (D7) consist of all current transfers other than current taxes on income, wealth, etc., social contributions and social benefits.*** The group includes premiums less service charges and claims under non-life insurance policies, current transfers between different kinds of government units, usually at different levels of government, and also between general government and foreign governments, as well as current transfers to and from NPISHs and between resident and non-resident households.

2. Disposable income

9.20 Disposable income is the balancing item in the income transfers other than social transfers in kind account. It is derived from the balance of earned incomes of an institutional unit or sector by:

- Adding all current transfers, except social transfers in kind, receivable by that unit or sector; and
- Subtracting all current transfers, except social transfers in kind, payable by that unit or sector.

9.21 Disposable income, like the balance of earned incomes, may be recorded gross or net of depreciation and depletion. As elsewhere, the net measure is conceptually preferable but it may be necessary to record the balancing items gross because of the difficulty of measuring depreciation and depletion, even though depreciation and depletion are costs of production and not to be considered as components of income. The following discussion refers to the net concept of disposable income.

9.22 Disposable income is not all available in cash. The inclusion in the accounts of non-monetary transactions associated with production for own consumption or barter, or with remuneration in kind, means that households have no choice but to consume certain kinds of goods and services for which the values of the corresponding expenditures out of disposable income are imputed. Although social transfers in kind from government units or NPISHs to households are recorded separately in the social transfers in kind account, other transfers in kind are recorded in the income transfers other than social transfers in kind account together with transfers in cash. They may include international transfers of food, clothing, medicines, etc. to relieve the effects of famine or other hardships caused by natural disasters or wars. The recipients of transfers in kind, other than social transfers in kind, are, by convention, recorded as making imputed consumption expenditures on the goods or services in question as if the transfers were received in cash.

9.23 Households also receive several kinds of imputed property income flows that are not available to the household to spend as they wish. These include investment income on insurance technical reserves, life insurance and annuity entitlements and pension entitlements as well as income from investment fund shares or units. Income flows related to investment funds and to life insurance and annuities that are not treated as social insurance do carry through to disposable income even though they automatically go to increase the assets held by households in the financial institutions managing these funds and policies and the household therefore has no discretion about spending these amounts. Income flows that are related to non-life insurance and social insurance schemes are recorded in the income transfers other than social transfer in kind account as if repaid to the non-life insurance corporation or social insurance schemes and are not included in disposable income except for the part already committed to meet the service charge associated with the insurance policy or social insurance scheme.

9.24 For households, disposable income is not affected by the excess of SNA interest over bank interest on deposits by households and the excess of bank interest over SNA interest on loans to households in the case of mortgage loans (as the difference will be recorded as intermediate consumption of implicit financial services on loans and deposits in the production of owner-occupied housing services) and in the case of business loans and deposits (for which the implicit financial services on loans and deposits will also be recorded as intermediate consumption in the production activities of the household). In other cases, disposable income of households will be affected, but not saving, as the relevant implicit financial services on loans and deposits are recorded as part of final consumption expenditure. (For other institutional sectors excluding financial intermediaries, these implicit service charges are treated as part of intermediate consumption, and thus excluded from income measures.)

Links with economic theoretical concepts of income

9.25 Disposable income as measured in the sequence of economic accounts can be compared with the concept of income as it is generally understood in economics. From a theoretical point of view, income is often defined as the maximum amount that a household, or other unit, can consume without reducing its real net worth. However, the real net worth of a unit may be changed as a result of the receipt or payment of capital transfers and as a result of real holding gains or losses that accrue on its assets or liabilities. It may also be changed by events such as natural disasters that change the volume of assets. Capital transfers, real holding gains or losses and other changes in the volume of assets due to the effect of events such as natural disasters are specifically excluded from disposable income as measured here. (Capital transfers are recorded in the capital account of the sequence of economic accounts, while other changes in the volume of assets (and liabilities) and real holding gains or losses are recorded in the other changes in assets and liabilities accounts.) Disposable income can be interpreted in a narrow sense as the maximum amount that a household or other unit can afford to spend on consumption goods or services during the accounting period without having to finance its expenditures by reducing its cash, by disposing of other financial or non-financial assets or by increasing its liabilities. This concept is equivalent to the economic theoretical concept only when the net worth at the beginning of the period is not changed by capital transfers, other changes in the volume of assets and liabilities or real holding gains or losses recorded during the period.

National disposable income

9.26 Most current transfers, whether in cash or in kind, can take place between resident and non-resident institutional units as well as between resident units. Gross or net national disposable income may be derived from gross or net national income by:

- Adding all current transfers in cash or in kind receivable by resident institutional units from non-resident units; and
- Subtracting all current transfers in cash or in kind payable by resident institutional units to non-resident units.

9.27 Among the more important current transfers taking place between residents and non-residents are the following:

- Social contributions and benefits;
- Current taxes on income or wealth;
- Non-life insurance premiums and claims;
- Current international cooperation; that is, current transfers between different governments, such as transfers under aid programmes intended to sustain the consumption levels of populations affected by war or natural disasters such as droughts, floods or earthquakes;
- Remittances between resident and non-resident households.

9.28 The net disposable income of a country is a better measure than its net national income (NNI) for purposes of analysing its consumption possibilities.

3. The social transfers in kind account

9.29 Apart from the balancing items, disposable income and disposable income adjusted for social transfers in kind, all the entries in the social transfers in kind account consist of social transfers in kind. Social transfers in kind consist only of social benefits in kind and transfers of individual non-market goods and services provided to resident households by government units, including social security funds, and NPISHs.

9.30 As social transfers in kind only take place between government units, NPISHs and households, the social transfers in kind account is not needed for the non-financial and financial corporate sectors.

9.31 The social transfers in kind payable by government units or NPISHs are recorded on the left-hand side of their social transfers in kind accounts under expenditures. For example, in table 9.2, the value of individual non-market goods or services provided free, or at prices that are not economically significant, by government units is recorded at the intersection of the row for this item and the expenditures column for the general government sector. Social transfers receivable by the household sector are recorded on the right-hand side of their account under revenues. As only the household sector receives social transfers in kind, the revenues columns for the other four sectors are empty.

Table 9.2: The social transfers in kind account – expenditures

Expenditures

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
D63	Social transfers in kind			184		34	218			218
D631	Social transfers in kind - non-market production			180		34	214			214
D632	Social transfers in kind - purchased market production			4			4			4
B7g	Disposable income adjusted for social transfers in kind, gross	222	25	151	1 437	6	1 841			1 841
B7n	*Disposable income adjusted for social transfers in kind, net*	35	13	124	1 414	3	1 589			1 589

Table 9.2 (cont): The social transfers in kind account - revenues

Revenues

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
B6g	Disposable income, gross	222	25	335	1 219	40	1 841			1 841
B6n	*Disposable income, net*	35	13	308	1 196	37	1 589			1 589
D63	Social transfers in kind				218		218			218
D631	Social transfers in kind - non-market production				214		214			214
D632	Social transfers in kind - purchased market production				4		4			4

4. Disposable income adjusted for social transfers in kind

9.32 Disposable income adjusted for social transfers in kind is the balancing item in the social transfers in kind account. It is derived from the disposable income of an institutional unit or sector by:

- Adding the value of the social transfers in kind receivable by that unit or sector; and
- Subtracting the value of the social transfers in kind payable by that unit or sector.

Disposable income adjusted for social transfers in kind, like disposable income, may be recorded gross or net of depreciation and depletion. Because social transfers in kind are payable only by government units and NPISHs and only receivable by households, it follows that the disposable incomes adjusted for social transfers in kind of the general government and NPISHs sectors are lower than their disposable incomes, while the disposable income adjusted for social transfers in kind of the household sector exceeds its disposable income. In both cases, the value of the difference is equal to the total value of social transfers in kind, so disposable income adjusted for social transfers in kind for the total economy is the same as its disposable income.

9.33 The disposable income adjusted for social transfers in kind of a household can be interpreted as measuring the maximum value of the actual final consumption goods or services (see chapter 10 on Use of income accounts) that it can afford to consume in the current period without having to reduce its cash, dispose of other assets or increase its liabilities for the purpose. Its consumption possibilities are determined not only by the maximum amount it can afford to spend on consumption goods and services (its disposable income), but also by the value of the consumption goods and services it receives from government units or NPISHs as social transfers in kind. Conversely, the disposable income adjusted for social transfers in kind of general government can be interpreted as measuring the maximum value of the collective services that it can afford to provide to the community without having to dispose of assets or increase its liabilities.

B. Current transfers

9.34 As defined above, ***transfers are transactions in which one institutional unit provides a good, service or asset to another unit without receiving from the latter any good, service or asset in return as a direct counterpart.*** A unit making a transfer receives no specific quantifiable benefit in return that can be recorded as part of the same transaction. Nevertheless, the payment of a social insurance contribution or non-life insurance premium may entitle the unit making the payment to some contingent future benefits. For example, a household may be entitled to receive some social benefits should certain events occur or certain conditions prevail. In addition, all resident households benefit from services provided by government units. However,

the fact that a transfer has been made does not automatically mean a benefit will be received by the unit making the transfer nor, if it does, that the amount of the benefit is commensurate with the amount of the transfer. It is for this reason that the integrated framework of the SNA holds there is no direct counterpart to the transfer.

9.35 The process of government collecting taxes and using the revenue generated to pay for the provision of government services and the process by which an insurance corporation accepts premiums for non-life insurance in a year from many policyholders and pays claims to a relatively small number of them are essentially distributive in nature. Within a single accounting period, an institutional unit (the government or the insurance corporation) receives and disburses funds according to a given set of procedures but the events giving rise to payments to and disbursements by these units are not directly related.

9.36 In contrast, payments of premiums on individual life insurance policies taken out by members of households on their own initiative outside any social insurance scheme, and the corresponding benefits, are not transfers. For life insurance, the insurance corporation manages funds on behalf of named households. There is relatively little redistribution among the various households holding similar policies and each household is able to predict with a reasonable degree of certainty what they will receive and when. Such policies therefore constitute the acquisition and disposal of financial assets and are recorded as such in the financial accounts of the sequence of economic accounts as components of the change in the life insurance and annuity entitlements.

9.37 It could be argued that pension schemes function in a manner similar to life insurance schemes and that they should be treated as savings schemes of individual households. There are three reasons why the designation of social insurance scheme is used to cover employment-related pensions, a designation that brings with it the recording of contributions and benefits as transfers. The first is that social security is essentially a process of redistribution across a wide section of the population with many individuals contributing so that those in need may benefit. A second reason is that pensions provide a regular and stable source of funding post-retirement. In other economic applications, such as surveys of income and expenditure, pensions are regarded as income rather than dis-saving. The third reason for treating pensions as income rather than dis-saving is that they frequently cease when the pensioner (or survivor) dies. In this respect, pension entitlements are distinct from other financial assets that are unaffected by the death of the owner.

1. The distinction between current and capital transfers

9.38 Transfers may be either current or capital. In order to distinguish one from the other, it is preferable to focus on the special characteristics of capital transfers. As noted above, a capital transfer is one that is linked to the acquisition or disposal of an asset, either financial or non-financial. Institutional units must be capable of distinguishing capital from current transfers and must be presumed to treat capital transferred during the course of the accounting period in the same way as capital held throughout the period. For example, a prudent household will not treat a capital transfer that happens to be received during a particular period as being wholly available for final consumption within the same accounting period. Conversely, a household making a capital transfer (for example, the payment of an inheritance tax) will not plan to reduce its final consumption by the whole amount of the transfer. Unless institutional units are capable of distinguishing capital from current transfers and react differently to them, it becomes impossible to measure income, both in theory and in practice.

9.39 Current transfers consist of all transfers that are not transfers of capital. They directly affect the level of disposable income and should influence the consumption of goods or services. In practice, capital transfers tend to be large, infrequent and irregular, whereas current transfers tend to be comparatively small and are often made frequently and regularly. However, while size, frequency and regularity help to distinguish current from capital transfers they do not provide satisfactory criteria for defining the two types of transfer. For example, social security benefits in the form of maternity or death benefits are essentially current grants designed to cover the increased consumption expenditures occasioned by births or deaths, even though the events themselves are obviously infrequent.

9.40 It is possible that some cash transfers may be regarded as capital by one party to the transaction and as current by the other. For example, the payment of an inheritance tax may be regarded as a capital transfer by the household but as a current transfer by government. Similarly, a large country that regularly makes investment grants to a number of smaller countries may regard the outlays as current, even though they may be

specifically intended to finance the acquisition of assets. In an integrated system of accounts such as the sequence of economic accounts, however, it is not feasible to have the same transaction classified differently by the two parties. Accordingly, a transfer should be classified as capital for both parties if it clearly involves a transfer of an asset for one of the parties.

2. The recording of transfers

9.41 Although no good, service or asset is received in return as a direct counterpart to a transfer, the recording of a transfer nevertheless must give rise to four entries in the accounts. The ways in which transfers (whether in cash or in kind) and social transfers in kind are recorded are shown below in the following examples.

Transfers in cash

9.42 The first example is of a current transfer in cash, such as the payment of a social security benefit in cash. The transfer is recorded as payable by the social security fund and receivable by the household in the income transfers other than social transfers in kind account. (If the transfer were a capital transfer, it would be recorded in the capital account instead of the income transfers other than social transfers in kind account.) The consequence of the transfer is a reduction in the financial assets (or increase in the financial liabilities) of the social security scheme and an increase in the financial assets of the household. The eventual use of the cash by the household is recorded subsequently as a separate transaction.

	Household		Social security fund	
	Expenditures / Changes in assets	Revenues / Changes in liabilities and net worth	Expenditures / Changes in assets	Revenues / Changes in liabilities and net worth
Income transfers other than social transfer in kind account		Transfers receivable	Transfers payable	
Financial account	Increase in financial assets		Decrease in financial assets	

Provisions of goods and services by enterprises

9.43 The next example is of an enterprise producing medicines that donates some of its output free of charge to a charity (NPISH). In this case, two transactions should be recorded. The first is the provision of a transfer by the enterprise to the NPISH, the second is the production of the medicine and the subsequent consumption of the medicine by the NPISH. Both transactions do not involve any entries in the financial account, if both transactions are completed in the same accounting period. However, if there is a difference in the timing between when the transfer is recorded and when the delivery of the medicine takes place, it will be necessary to include the entries in the financial accounts, specifically under other accounts receivable/payable.

	NPISH		Enterprise	
	Expenditures / Changes in assets	Revenues / Changes in liabilities and net worth	Expenditures / Changes in assets	Revenues / Changes in liabilities and net worth
Income transfers other than social transfer in kind account		Transfers receivable	Transfers payable	
Production account				Output/sale of medicine
Use of disposable income account	Expenditure on medicine			
Financial account	Increase in financial asset		Decrease in financial asset	

9.44 A more complex variant occurs if enterprise A purchases the medicine from enterprise B and then gives it to an NPISH. Although A actually purchases the goods from B, they do not form part of A's intermediate consumption or capital formation. Nor can they be recorded as final consumption by A, since it is an enterprise. A cash transfer is shown for the purchase of medicine by enterprise A from enterprise B. As this medicine is subsequently provided for free to the NPISH, the counterpart entry of the decrease in assets for enterprise A is as a transfer payable to the NPISH. Again, if there is a difference in the timing between when the transfer is recorded and when the delivery of the medicine takes place, it will be necessary to include the entries in the financial accounts, specifically under other accounts receivable or payable.

	NPISH		Enterprise A		Enterprise B	
	Expenditures/ Changes in assets	Revenues/ Changes in liabilities and net worth	Expenditures/ Changes in assets	Revenues/ Changes in liabilities and net worth	Expenditures/ Changes in assets	Revenues/ Changes in liabilities and net worth
Income transfers other than social transfer in kind account		Transfers receivable	Transfers payable			
Financial account		Decrease in financial asset				
Production account						Output/sale of medicine
Use of disposable income account	Expenditure on medicine					
Financial account					Increase in financial asset	

Social transfers in kind

9.45 In the integrated framework of the SNA, final consumption expenditure is incurred only by general government, NPISHs, the central bank and households. All consumption expenditure by households is incurred on their own behalf. Consumption expenditure by general government, on the other hand, is either for the benefit of the community at large (collective consumption) or for the benefit of individual households. Consumption expenditure by the central bank is considered to be produced for the benefit of the community at large, while consumption expenditure by NPISHs is always treated as the provision of services for the

benefit of individual households. This distinction between collective and individual consumption expenditure is of considerable importance in the integrated framework of the SNA and is discussed in detail in chapter 10 on Use of income accounts. Consumption expenditures by general government and NPISHs on behalf of households (their individual consumption expenditures) are undertaken for the purpose of making social transfers in kind. They cover the non-market output of both general government and NPISHs delivered to households free, or at prices that are not economically significant, as well as goods and services bought from market producers and provided to households free or at prices that are not economically significant.

	General government	
	Expenditures/Changes in assets	Revenues/Changes in liabilities and net worth
Production account		Output of education service
Use of disposable income account	Consumption expenditure of education services	

9.46 The next example is of an education service provided to a household by a non-market producer controlled by a government unit. The provision of the service is actually recorded twice in the sequence of economic accounts. First, it is recorded in the traditional way in national accounting as output by government in the production account and final consumption expenditure of government in the use of disposable income account. As this transaction is recorded as an internal transaction within government, it leads to only two, not four entries, in the accounts, both being recorded under general government.

9.47 This method of recording does not portray the fact that in reality the education service (an individual consumption expenditure of government) is actually provided to a household as a social transfer in kind paid for by government.

	Household		General government	
	Expenditures/Changes in assets	Revenues/Changes in liabilities and net worth	Expenditures/Changes in assets	Revenues/Changes in liabilities and net worth
Production account				Output of education services
Social transfer in kind account		Social transfers in kind receivable	Social transfers in kind payable	
Use of disposable income adjusted for social transfers in kind account	Actual consumption of education services			

9.48 For a social transfer in kind, the consumption of the education service is recorded as actual consumption by households in the use of disposable income adjusted for social transfers in kind account. The revenues for this are provided via social transfers in kind from government to households in the social transfers in kind account. (The distinction between actual consumption and consumption expenditure for households, general government and NPISHs is further elaborated in chapter 10 on Use of income accounts.)

9.49 The final example is a more complex case involving two interrelated transactions in which a government unit, or NPISH, purchases a good or service, such as a medicine, from a market producer and then provides it free to a household.

9.50 Under the normal recording in the sequence of economic accounts, four entries would be required showing the sale of the medicine by the enterprise and the purchase as final consumption expenditure of government with consequences for the financial accounts for both units. The purchase would be recorded as consumption expenditure by government. When explicitly recording social transfers in kind, the entry for the consumption expenditure by government is replaced by two entries for the social transfers in kind and one for actual

consumption by households. The entries for the financial account remain as under the normal recording of government purchases.

	Household		General government		Enterprise	
	Expenditures/ Changes in assets	Revenues/ Changes in liabilities and net worth	Expenditures/ Changes in assets	Revenues/ Changes in liabilities and net worth	Expenditures/ Changes in assets	Revenues/ Changes in liabilities and net worth
Production account						Output/sale of medicine
Income transfers other than social transfer in kind account		Social transfers in kind receivable	Social transfers in kind payable			
Use of disposable income adjusted for social transfers in kind account	Actual consumption of medicine					
Financial account			Decrease in financial asset		Increase in financial asset	

9.51 This example also covers the case in which the household purchases the medicine directly from a pharmacist and is then reimbursed by the social security fund, other government unit or NPISH that ultimately bears the cost. In this case, the household is not recorded as actually incurring any expenditure, the expenditure being attributed to the social security fund or other unit that ultimately bears the cost. Any difference between the time when the household incurs the expense and the time when it is reimbursed is shown as an other account receivable (by households) and payable (by the unit ultimately bearing the cost).

C. Current taxes on income, wealth, etc.

1. Taxes in general

9.52 ***Taxes are compulsory, unrequited payments, in cash or in kind, made by institutional units to government units.*** They are transfers because the government provides nothing directly in return to the individual unit paying the tax, although governments do provide goods and services to the community as a whole or to individual units, or groups of units, depending on their general economic and social policy. Current taxes on income, wealth, etc. consist mainly of taxes levied on the incomes of households and corporations. They constitute charges against income and are recorded under expenditures for the households and corporations' sectors in the income transfers other than social transfers in kind account. The taxes may also be payable by non-residents or possibly by government units or NPISHs. Current taxes on income, wealth, etc. were described as "direct taxes" in the past, but the terms "direct" and "indirect" are no longer used in the SNA, as explained in chapter 8 on Earned income accounts. The taxes cannot be described simply as "current taxes on income and wealth" because they include some periodic taxes on households that are assessed neither on the income nor the wealth of the household or its members, for example, poll taxes.

9.53 The general nature of taxes and the accounting rules governing their recording in the sequence of economic accounts were described in paragraphs 8.82 to 8.91. For convenience, the relevant paragraphs are repeated below.

Taxes versus fees

9.54 One of the regulatory functions of governments is to forbid the ownership or use of certain goods or the pursuit of certain activities, unless specific permission is granted by issuing a licence or other certificate for which a fee is demanded. Price levels for these types of mandatory permissions are set by the government, often through some type of executive, legislative, or statutory power. Those seeking the permission or authorization frequently pay with no option to receive a refund should the licence (or similar) not be granted. The permission or authorization granted under these types of schemes is not transferable or tradeable, and so has no direct economic value. Indeed, for many such regulatory schemes the payer of the fee is not to be seen as the primary beneficiary, as the motivation behind the regulation or licencing of an activity or good is to protect society as a whole and ensure that those engaging in an activity or owning a good are able to do so safely in accordance with laws. For example, driving licences are intended to ensure that those using the road networks have the necessary skills and knowledge to do so safely. Although the payer benefits from being able to drive the primary beneficiary is society. For the above reasons, mandatory payments for most regulatory licences, or similar certificates, are to be recorded as taxes, as they are by nature compulsory and unrequited.

9.55 Although most payments under mandatory regulatory schemes should be recorded as taxes, there may be cases where recording as a sale of service is appropriate despite the compulsory nature of the payment. For instance, the cost of a mandatory safety inspection may be based on the cost to government of conducting the inspection and could include a service element, such as providing guidance on how identified safety hazards can be rectified. In this case it might be appropriate to record the payment as a payment of service rather than a tax, but only if the service element of the payment is considered sufficiently material. To recap, the default recording for payments under government-imposed mandatory regulatory schemes should be as taxes, unless a significant service element can be identified leading to recording as a payment of service.

Links with the IMF and OECD tax classifications

9.56 The coverage of taxes in the integrated framework of the SNA coincides with that of "tax revenue" as defined in the *GFSM*, and also with "taxes" as defined in the *OECD Revenue Statistics*. In contrast to the latter, the integrated framework of national accounts includes imputed taxes or subsidies resulting from the operation of official multiple exchange rates, but does not classify social security contributions under the heading of taxes. Chapter 5 of the *GFSM 2014* contains a detailed listing and classification of taxes according to the nature of the tax. Annex A of the *OECD Revenue Statistics* contains a closely related classification.

9.57 The categories of tax distinguished in the integrated framework of the SNA depend on the interaction of the following three factors, of which the nature of tax is only one:

a. The nature of the tax, as specified in the classifications of *GFSM* and *OECD Revenue Statistics*;

b. The type of institutional unit paying the tax;

c. The circumstances in which the tax is payable.

9.58 Thus, payments of exactly the same tax may be recorded under two different headings in the integrated framework of the SNA. For example, payment of an excise duty may appear under "taxes on imports, except value added taxes (VAT) and duties" or under "taxes on products, except VAT, import and export taxes" depending upon whether the excise duty is paid on an imported or domestically produced good. Similarly, payments of an annual tax on automobiles may be recorded under "other taxes on production" or under "current taxes on income, wealth, etc." depending upon whether the tax is paid by an enterprise or by a household. For this reason, it is not possible to arrive at the SNA categories simply by regrouping the classifications of the *GFSM* and the *OECD Revenue Statistics*. However, in order to take advantage of the existence of these detailed classifications, a bridge table has been published as an annex to the SNA, in which each category of tax listed below contains a cross-reference to the corresponding classifications of the latest versions of the *GFSM* and the *OECD Revenue Statistics*. It should be noted, though, that the SNA categories are included within the categories of *GFSM* and *OECD Revenue Statistics* but may not be identical with them.

The accrual basis of recording

9.59 All taxes should be recorded on an accrual basis in the SNA, that is, when the activities, transactions or other events occur that create the liabilities to pay taxes. However, some economic activities, transactions or events, which under tax legislation ought to impose on the units concerned the obligation to pay taxes, permanently escape the attention of the tax authorities. It would be unrealistic to assume that such activities, transactions or events give rise to financial assets or liabilities in the form of payables and receivables. For this reason the amounts of taxes to be recorded in the integrated framework of the SNA are determined by the amounts due for payment only when evidenced by tax assessments, declarations or other instruments, such as sales invoices or customs declarations, that create liabilities in the form of clear obligations to pay on the part of taxpayers. (In determining the amount of tax accruing, care must be taken not to include tax unlikely ever to be collected.) Nevertheless, in accordance with the accrual principle, the times at which the taxes should be recorded are the times at which the tax liabilities arise. For example, a tax on the sale, transfer or use of output should be recorded when that sale, transfer or use took place, which is not necessarily the same time as that at which the tax authorities were notified, at which a tax demand was issued, at which the tax was due to be paid or the payment was actually made. Some flexibility is permitted, however, as regards the time of recording of income taxes deducted at source (see paragraph 9.63).

9.60 Government may establish tax amnesty programmes. Two broad types of such programmes can be distinguished: (i) amnesties to speed up, or encourage, payment of taxes which have been accrued but are unpaid (i.e., relating to already disclosed transactions, events, and/or assets); and (ii) amnesties to capture revenue from economic activities and/or assets that have previously escaped the attention of the tax authorities (i.e., relating to previously undisclosed transactions, events, and/or assets). The time of recording and measurement of revenue arising from tax amnesties will depend on the exact nature of the amnesty granted and whether the revenue has been previously accrued. However, in accordance with the accrual principle, if a tax amnesty establishes tax obligations for previously undisclosed transactions, events or assets, then the tax revenue should be recorded when the tax obligation is established and not to a period prior to the tax amnesty.

9.61 In some countries, and for some taxes, the amounts of taxes eventually paid may diverge substantially and systematically from the amounts due to be paid to the extent that not all of the latter can be effectively construed as constituting financial liabilities as these are understood within the integrated framework of the SNA. In such cases, it may be preferable for analytic and policy purposes to ignore unpaid tax liabilities and confine the measurement of taxes within the integrated framework of the SNA to those actually paid. Nevertheless, the taxes actually paid should still be recorded on an accrual basis at the times at which the events took place that gave rise to the liabilities.

Interest, fines or other penalties

9.62 In principle, interest charged on overdue taxes or fines, or penalties imposed for the attempted evasion of taxes, should be recorded separately and not as taxes. However, it may not be possible to separate payments of interest, fines or other penalties from the taxes to which they relate, so that in practice they are usually grouped with taxes.

2. Taxes on income

9.63 ***Taxes on income (D51) consist of taxes on incomes, profits and capital gains.*** They are assessed on the actual or presumed incomes of individuals, households, NPISHs or corporations. They include taxes assessed on holdings of property, land or real estate when these holdings are used as a basis for estimating the income of their owners. In some cases the liability to pay income taxes can only be determined in a later accounting period than that in which the income accrues. Some flexibility is therefore needed in the time at which such taxes are recorded. Income taxes deducted at source, such as pay-as-you-earn taxes and regular prepayments of income taxes, may be recorded in the periods in which they are paid and any final tax liability on income can be recorded in the period in which the liability is determined. Taxes on income include the following types of taxes:

a. Taxes on individual or household income: These consist of personal income taxes, including those deducted by employers (pay-as-you-earn taxes), and surtaxes. Such taxes are usually levied on the total declared or presumed income from all sources of the person concerned: remuneration of employees, property income, pensions, etc., after deducting certain agreed allowances. Taxes on the income of owners of unincorporated enterprises are included here;

b. Taxes on the income of corporations: These consist of corporate income taxes, corporate profits taxes, corporate surtaxes, etc. Such taxes are usually assessed on the total incomes of corporations from all sources and not simply profits generated by production;

c. Taxes on capital gains: These consist of taxes on the capital gains (described as holding gains in the integrated framework of the SNA) of persons or corporations that become due for payment during the current accounting period, irrespective of the periods over which the gains have accrued. They are usually payable on nominal, rather than real, capital gains and on realized, rather than unrealized, capital gains;

d. Taxes on winnings from lotteries or gambling: These are taxes payable on the amounts received by winners as distinct from taxes on the turnover of producers that organize gambling or lotteries, which are treated as taxes on products.

9.64 The calculation of taxes due on income frequently exempts some part of income from taxes; such exemptions being described as tax allowances. In addition, or as an alternative, a government may determine an amount that is treated as if it is tax already paid; such an amount is called a tax credit. In some cases, if the tax due is less than the tax credit, the balance may be payable to the beneficiary; this is called a payable tax credit. There is more discussion on tax credits in chapter 30 on General government and the public sector.

3. Other current taxes

Current taxes on capital

9.65 ***Current taxes on capital consist of taxes that are payable periodically, usually annually, on the property or net wealth of institutional units, excluding taxes on land or other assets owned or rented by enterprises and used by them for production since such taxes are treated as other taxes on production.*** They also exclude taxes on property or wealth levied infrequently and at irregular intervals, or in exceptional circumstances (for example, death duties), such taxes being treated as capital taxes. They also exclude income taxes assessed on the basis of the value of the property owned by institutional units when their incomes cannot be estimated satisfactorily, such taxes being recorded under the previous heading, taxes on income. Current taxes on capital include the following:

a. Current taxes on land and buildings: These consist of taxes payable periodically, in most cases annually, on the ownership of land or buildings excluding taxes on land or buildings rented or owned by enterprises and used by them in production including use for owner-occupied housing services;

b. Current taxes on net wealth: These consist of taxes payable periodically, in most cases annually, on the value of land or fixed assets less any debt incurred on those assets, excluding taxes on assets owned by enterprises and used by them in production;

c. Current taxes on other assets: These include taxes payable periodically, usually annually, on assets such as jewellery or other external signs of wealth.

Miscellaneous current taxes

9.66 Miscellaneous current taxes consist of various different kinds of taxes payable periodically, usually annually, of which the most common are the following:

a. Poll taxes: These are taxes levied as specific amounts of money per adult person, or per household, independently of actual or presumed income or wealth. The amounts levied may vary, however, according to the circumstances of the person or household;

b. Expenditure taxes: These are taxes payable on the total expenditures of persons or households instead of on their incomes. Expenditure taxes are alternatives to income taxes and may be levied at progressively higher rates in the same way as personal income taxes, depending upon the total level of expenditure. They are uncommon in practice;

c. Payments by households to obtain certain licences: As explained in paragraphs 9.54 and 9.55, mandatory payments by persons or households in order to obtain licences to own or use certain goods or to engage in the pursuit of certain activities should generally be recorded as taxes. Examples of payments which would normally be treated as current taxes are licences to own or use vehicles, boats or aircraft, driving or pilot's licences, TV and radio licenses, firearm licences, licences for recreational hunting, shooting or fishing, visa fees, airport fees and court fees;

d. Taxes on international transactions: These consist of taxes on travel abroad, foreign remittances, foreign investments, etc. except those payable by producers.

D. Social insurance schemes

9.67 A social insurance scheme is an insurance scheme where the following two conditions are satisfied:

a. the benefits received are conditional on participation in the scheme and constitute social benefits as this term is used in the integrated framework of the SNA; and

b. at least one of the three conditions following is met:

- Participation in the scheme is obligatory either by law or under the terms and conditions of employment of an employee, or group of employees;
- The scheme is a collective one operated for the benefit of employees and/or self-employed persons, which may also include persons temporarily without employment;
- An employer makes a contribution (actual or imputed) to the scheme on behalf of an employee, whether or not the employee also makes a contribution.

The second of these conditions implies that employer-independent schemes may under certain conditions qualify as social insurance schemes; see paragraph 9.79 for a further elaboration. Collective schemes organized in the form of individual pension trusts may also qualify, provided that the conditions for social insurance are met.

9.68 Social insurance schemes may be organized privately or by government units. Social insurance benefits may be provided in cash or in kind. They become payable when certain events occur, or certain circumstances exist, that may adversely affect the material well-being of the households concerned either by imposing additional demands on their resources or reducing their incomes. The contingencies covered are liable to vary from scheme to scheme. However, the identification of certain receivables as social insurance benefits depends not just on the contingencies covered but also the way in which coverage is provided.

1. The extent of social benefits

9.69 Social benefits may be payable under social insurance schemes or social assistance but similar circumstances may be covered under both.

9.70 Social benefits may be divided into two main classes; pensions and all other social benefits, described in the integrated framework of the SNA as non-pension benefits. The most important type of pension is one paid to an individual when they cease employment on retirement. Pensions may also be payable to other individuals, for example a bereaved spouse or someone suffering from a permanent disability. Payments made while a person is temporarily unemployed or suffering a medical condition that prevents them from working for a period are treated as non-pension benefits.

9.71 More generally, as noted before, social benefits become payable when certain events occur, or certain conditions exist, that may adversely affect the material well-being of the households concerned either by

imposing additional demands on their resources or reducing their incomes. Social benefits may be provided in cash or in kind. There are a number of circumstances in which social benefits may be payable:

a. The beneficiaries, or their dependants, require medical, dental or other treatments, or hospital, convalescent or long-term care, as a result of sickness, injuries, maternity needs, chronic invalidity, old age, etc. The social benefits are usually provided in kind in the form of treatment or care provided free or at prices that are not economically significant, or by reimbursing expenditures made by households. Social benefits in cash may also be payable to beneficiaries needing health care;

b. The beneficiaries have to support dependants of various kinds: spouses, children, elderly relatives, invalids, etc. The social benefits are usually paid in cash in the form of regular dependants' or family allowances;

c. The beneficiaries suffer a reduction in income as a result of not being able to work full-time. The social benefits are usually paid regularly in cash for the duration of the condition. In some instances a lump sum may be provided additionally or instead of the regular payment. People may be prevented from working for various different reasons, including involuntary unemployment, including temporary lay-offs and short-time working, and sickness, accidental injury, the birth of a child, etc. that prevents a person from working, or from working full-time;

d. The beneficiaries suffer a reduction in income because of the death of the main income earner. The social benefits are usually paid in cash in the form of regular allowances or, in some instances, a lump sum;

e. The beneficiaries are provided with housing either free or at prices that are not economically significant or by reimbursing expenditure made by households;

f. The beneficiaries are provided with allowances to cover education expenses incurred on behalf of themselves or their dependants; education services may also be provided in kind.

9.72 The above are typical circumstances in which social benefits are payable. However, the list is illustrative rather than exhaustive. It is possible, for example, that under some schemes other benefits may be payable. Conversely, by no means do all schemes provide benefits in all the circumstances listed above. In practice, the scope of social benefits is liable to vary significantly from country to country, or from scheme to scheme within the same country.

9.73 In cases where no qualifying contribution has to have been paid in order to receive benefits, these are treated as part of social assistance. Typically social assistance is provided by government to all persons who are in need without any formal requirement to participate as evidenced by the payment of contributions, for example. The extent of social assistance varies very considerably from country to country. In many countries, benefits are only payable to people on low incomes. This is often described as saying the benefits are "means-tested", where the term "means" is used in the sense of indicating a maximum qualifying level of income or wealth.

2. The organization of social insurance schemes

9.74 Social insurance schemes are intended to cover beneficiaries and their dependants during their working lives and usually also into retirement. Eligibility for social insurance benefits requires social contributions to have been paid by, or on behalf of, the beneficiaries or their dependants in the current or previous accounting periods. As already noted, the social contributions may be payable not only by the participants themselves but also by employers on behalf of their employees.

9.75 Social insurance schemes must be organized collectively for groups of workers or be available by law to all workers or designated categories of workers. They may range from private schemes arranged for selected groups of workers employed by a single employer, private schemes organized for selected groups of self-employed persons, to social security schemes covering the entire labour force of a country. Participation in such schemes may be voluntary for the workers concerned, but it is more common for it to be obligatory. For example, participation in schemes organized by individual employers may be required by the terms and conditions of employment collectively agreed between employers and their employees. Participation in nationwide social security schemes organized by government units may be compulsory by law for the entire labour force, except perhaps for persons who are already covered by private schemes.

9.76 Many social insurance schemes are organized collectively for groups of workers so that those participating do not have to take out individual insurance policies in their own names. In such cases, there is no difficulty about distinguishing social insurance from insurance taken out on a personal basis. However, some social insurance schemes may permit, or even require, participants to take out policies in their own names. In order for an individual policy to be treated as part of a social insurance scheme the eventualities or circumstances against which the participants are insured must be of the kind listed in paragraphs 9.71 and in addition, both conditions listed under a) and b) of paragraph 9.67 must be satisfied.

9.77 Social insurance schemes are essentially schemes in which workers are obliged, or encouraged, by their employers or by general government to take out insurance against certain eventualities or circumstances that may adversely affect their material well-being or that of their dependants. Such schemes may also be organized for groups of self-employed persons. When individuals take out insurance policies in their own names, on their own initiative and independently of their employers or government, the premiums payable and claims receivable are not treated as social contributions and social (insurance) benefits, even though the policies may be taken out against the same kinds of eventualities or situations as are covered by social insurance schemes such as accident, ill health, retirement, etc. The premiums payable and claims receivable under such individual insurance policies are recorded as current transfers in the income transfers other than social transfers in kind account in the case of non-life insurance, while the premiums payable and claims receivable under individual life insurance policies are recorded as acquisitions and disposals of financial assets in the financial account.

9.78 In the case of employer-employee relationships, the determinants for the insurance to count as a social insurance policy, and not as an individual insurance policy, are that the benefits must be of the social benefit type (see paragraphs 9.70 and 9.71), and an employer typically makes an actual or imputed contribution to the scheme on behalf of an employee. If participation to a scheme is not obligatory, but only encouraged, it can become more difficult to differentiate between social insurance type of schemes and individual insurance policies. It is clear, however, that insurance policies solely taken out by individuals would not qualify as social insurance, even if, for example, a discount is arranged for a designated group of people.

9.79 Schemes providing social benefits may also be established for groups of self-employed persons or other groups of people. When organized by government, as part of a broader arrangement, such schemes would typically qualify as social insurance. If government is not directly involved, the default option is to not treat such types of schemes as part of social insurance, unless the schemes are collective arrangements which provide policies, for certain industries or professions, with a strong resemblance to similar arrangements organized by employers or government. These schemes may, or may not, be encouraged by government; in the former case, this would strengthen the case for a classification as social insurance. To qualify as social insurance, generally separate institutional units should be established that are subject to regulation or supervision in line with or similar to other social insurance schemes. In the case of pension-related schemes, an additional criterion for the qualification as social insurance is that accumulated contributions are set aside for retirement income.

9.80 As can be seen from the consideration of individual insurance policies, the nature of the benefit is by no means sufficient to identify the social nature of the transactions. For example, the receipt of free medical services does not always constitute a social benefit. If the medical services received by one household are paid for by another, they are not social benefits but transfers between households. First aid rendered to employees at work is not a social benefit, the costs involved being recorded as intermediate consumption of the employer. In general, social benefits cannot be provided by one household to another except in the relatively rare case in which an unincorporated enterprise owned by a household operates a social insurance scheme for the benefit of its employees.

9.81 Two main types of social insurance schemes may be distinguished:

a. The first consists of social security schemes covering the entire community, or large sections of the community, that are imposed, controlled and financed by government units. Pensions payable under these schemes may or may not be related to levels of salary of the beneficiary or history of employment. Non-pension benefits are less frequently linked to salary levels.

b. The second type consists of other social insurance schemes. These schemes mainly derive from an employer-employee relationship in the provision of pension and possibly other entitlements that are

part of the conditions of employment and where responsibility for the provision of benefits does not devolve to general government under social security provisions. They may also relate to employer-independent collective arrangements (see paragraph 9.79).

Making this distinction is difficult in some countries where the ultimate responsibility for administering the scheme and paying benefits is undertaken by government on behalf of many employers not working for general government. In countries where there is no such arrangement, social insurance schemes organized by government units for their own employees, as opposed to the working population at large, should, if possible, be included in the group of other social insurance schemes and not remain within social security schemes.

Social security schemes

9.82 In many countries, social security schemes are by far the most important category of social insurance schemes and it is worth summarizing their main characteristics. Social security schemes are schemes imposed, controlled and financed by government units for the purpose of providing social benefits to members of the community as a whole, or of particular sections of the community. When social security funds are established for this purpose and are organized and managed separately from other government funds, they are treated as separate institutional units. Their receipts consist mainly of contributions paid by individuals and by employers on behalf of their employees, but they may also include transfers from other government funds. The payment of social security contributions by, or on behalf of, certain specified individuals, such as employees and self-employed, including persons temporarily without employment, is generally compulsory by law, but some other individuals may choose to pay voluntarily in order to qualify for the receipt of social security benefits.

Other employment-related social insurance schemes

9.83 The terms of other social insurance schemes are typically determined by employers, possibly in conjunction with their employees and may be administered by the employers themselves. They may also be organised for selected groups of self-employed persons. In the case of schemes organised by employers for their employees, the funds may form a separate institutional unit (e.g., an autonomous pension fund) or they may be managed by an insurance corporation on behalf of the employer. Collective agreements for selected groups of self-employed persons are generally restricted to those managed by a separate institutional unit (see paragraph 9.79).

9.84 Other social insurance schemes may not be adequately funded, particularly in the case of pension schemes organized by employers for their employees. In the case of the employer being responsible for any shortfall, transactions are recorded in the income transfers other than social transfers in kind account, as if the schemes are adequately funded and any discrepancies are recorded in the financial account under claims of pension funds on pension sponsors. A complete overview of the recording of pension schemes is given in chapter 24 on Insurance and pensions.

E. Social contributions less service charges

9.85 In the integrated framework of the SNA, all contributions to social insurance schemes are shown as made by households. There are, however, several elements to the amounts paid. The first is the amount of actual and imputed contributions made by the employer on behalf of the employee. This amount is part of remuneration of employees and is received by households in the generation of earned income account and thus forms part of the balance of earned income of households. The second element consists of actual payments made by households in the current period to cover their share of the pension and other provisions relating to the current period. These payments may be made by employees or self-employed persons, which may also include persons temporarily without employment. A third element consists of contribution supplements, or imputed payments by households, which represent the reinvestment of the property income earned on pension entitlements and on any reserves established for non-pension benefits. This property income is attributed to households in the allocation of earned income account and, like the employers' contributions, included in the balance of earned incomes for households. Set against these is the service fee charged by the unit

administering the pension scheme. This may be a service charge made by a unit separate from the employer or may be the sum of costs incurred by the employer in administering the scheme if it is not a separate unit. Depending on the nature of the scheme, either the contribution by the employer or the contribution supplements includes the value of the service charge.

9.86 Table 9.3 shows table 9.1 with social contributions disaggregated according to these criteria. For practical reasons, the tables show the employers' contributions and property income at the same value as recorded in the earned income accounts with the service charge shown separately. This charge, though, is not a redistributive transaction but part of output and consumption expenditure. It is included in the table to clarify the way in which social insurance is funded. Each heading is discussed briefly in turn below. A more extensive discussion of the transactions to be recorded for pension schemes is given in chapter 24 on Insurance and pensions.

1. Components of social contributions

9.87 ***Social contributions less service charges (D61) are the actual and imputed contributions payable to social insurance schemes to make provision for social benefits to be paid, less any fees charged by the administrators of the schemes.*** The fees are treated as consumption expenditure by households in the use of disposable income account.

2. Employers' actual social contributions

9.88 This item is exactly the same as that recorded in the allocation of earned income account and described in paragraph 8.63.

3. Employers' imputed social contributions

9.89 This item is exactly the same as that recorded in the allocation of earned income account and described in paragraphs 8.64 to 8.71.

4. Households' actual social contributions

9.90 ***Households' actual social contributions (D613) are social contributions payable on their own behalf by employees or self-employed persons, which may include persons temporarily without employment, to social insurance schemes.*** They are recorded on an accrual basis. For those in work, this is at the times when the work that gives rise to the liability to pay the contributions is carried out.

5. Households' social contribution supplements

9.91 ***Households' social contribution supplements (D614) consist of the investment income earned during the accounting period on the stock of pension and non-pension entitlements***. This amount is included in property income payable by the pension schemes and non-pension schemes to households in the allocation of earned income account.

Table 9.3: The income transfers other than social transfers in kind account - with details for taxes and social contributions – expenditures

Expenditures

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
	Current transfers	98	277	248	582	7	1 212	17		1 229
D5	Current taxes on income, wealth, etc.	24	10	0	178	0	212	1		213
D51	Taxes on income	20	7	0	176	0	0	1		1
D59	Other current taxes	4	3	0	2	0	0			0
D61	Social contributions less service charges				333		333	0		333
D611	Employers' actual social contributions				181		181	0		181
D6111	Employers' actual pension contributions				168		168	0		168
D6112	Employers' actual non-pension contributions				13		13	0		13
D612	Employers' imputed social contributions				19		19	0		19
D6121	Employers' imputed pension contributions				18		18	0		18
D6122	Employers' imputed non-pension contributions				1		1	0		1
D613	Households' actual social contributions				129		129	0		129
D6131	Households' actual pension contributions				115		115	0		115
D6132	Households' actual non-pension contributions				14		14	0		14
D614	Households' social contributions supplements				10		10	0		10
D6141	Households' pension contribution supplements				8		8	0		8
D6142	Households' non-pension contribution supplements				2		2	0		2
D615	Social insurance scheme service charges				6		6	0		6
D62	Social benefits other than social transfers in kind	62	205	112	0	5	384	0		384
D7	Other current transfers	12	62	136	71	2	283	16		299
B6g	Disposable income, gross	222	25	335	1 219	40	1 841			1 841
B6n	*Disposable income, net*	35	13	308	1 196	37	1 589			1 589

Table 9.3 (cont): The income transfers other than social transfers in kind account - with details for taxes and social contributions - revenues

Revenues

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
B5g	Balance of earned incomes, gross / National income, gross	248	27	216	1 381	7	1 879			1 879
B5n	*Balance of earned income, net / National income, net*	61	15	189	1 358	4	1 627			1 627
	Current transfers	72	275	367	420	40	1 174	55		1 229
D5	Current taxes on income, wealth, etc.			213			213	0		213
D51	Taxes on income			1			1	0		1
D59	Other current taxes			0			0			0
D61	Social contributions less service charges	66	213	50	0	4	333	0		333
D611	Employers' actual social contributions	31	110	38	0	2	181	0		181
D6111	Employers' actual pension contributions	27	104	35	0	2	168	0		168
D6112	Employers' actual non-pension contributions	4	6	3	0	0	13	0		13
D612	Employers' imputed social contributions	12	2	4	0	1	19	0		19
D6121	Employers' imputed pension contributions	12	1	4	0	1	18	0		18
D6122	Employers' imputed non-pension contributions	0	1	0	0	0	1	0		1
D613	Households' actual social contributions	25	94	9	0	1	129	0		129
D6131	Households' actual pension contributions	19	90	6	0	0	115	0		115
D6132	Households' actual non-pension contributions	6	4	3	0	1	14	0		14
D614	Households' social contributions supplements		10				10	0		10
D6141	Households' pension contribution supplements		8				8	0		8
D6142	Households' non-pension contribution supplements		2				2	0		2
D615	Social insurance scheme service charges	2	3	1			6	0		6
D62	Social benefits other than social transfers in kind				384		384	0		384
D7	Other current transfers	6	62	104	36	36	244	55		299

F. Social benefits other than social transfers in kind

9.92 Social benefits are current transfers received by households intended to provide for the needs that arise from certain events or circumstances. Social benefits are divided into two groups, the first consists of pension benefits and the second of all other benefits, described as non-pension benefits. These cover, for example, payments due in respect of sickness, unemployment, housing, education or family circumstances.

9.93 The way in which the receipt of social benefits is recorded in the accounts depends on a number of intersecting factors. As well as the type of social benefit, pension or non-pension, it is necessary to specify whether the benefits are payable under a social insurance scheme or not, whether they are paid by government or not, and whether they are paid in cash or not. The following sections discuss the different institutional arrangements

for paying benefits, then the different types of benefits, before summarizing how these appear in the accounts.

1. Institutional arrangements

Social insurance schemes or social assistance

9.94 Social benefits may be payable as part of a social insurance scheme or by government as social assistance. Unlike social assistance, all social insurance schemes require formal participation by the beneficiaries. This participation is linked to employment and is usually evidenced by the payment of contributions to the scheme either by the participants, an employer, or both. Social security is an important kind of social insurance and like social assistance, is provided by government. It is therefore necessary to determine when a social benefit provided by government is made as part of social security and when it is part of social assistance.

Social security and social assistance

9.95 There is a fundamental difference between government provision of benefits under social security and under social assistance although the proportion of benefits allocated to one or the other heading varies considerably from country to country depending on national institutional arrangements.

9.96 Social security is one form of a social insurance scheme. The beneficiary is enrolled in the scheme or participates usually by paying a contribution to the scheme or having one paid to the scheme on his behalf. The payment may be made by the employer or a family member or even in some cases by government itself (perhaps for the duration of unemployment, for instance). Because it is a contributory scheme, there is some sort of contract between the government and the beneficiaries. In some countries this contract has a strict legal form and cannot be altered retrospectively; in others the contract is much looser and retroactive adjustments are possible. For all social security schemes, the difference between the contributions receivable and the benefits payable is monitored in the context of the government budget since persistent deficits cannot be sustained for ever without intervention to raise contributions, lower benefits or both.

9.97 Social assistance is distinguished from social security in that eligibility to receive social assistance benefits is not dependent on having elected to participate as demonstrated by the payment of contributions. Usually all members of resident households are entitled to apply for social assistance but the conditions under which it is granted are often restrictive. Frequently there is an assessment of available income/wealth in relation to the perceived needs of a household and only those households falling below a given threshold may be entitled to this type of social assistance. (This process is often described as “means-testing”.)

9.98 The extent to which social assistance provides incomes to households varies extensively from country to country. In some countries, indeed, there is no social security and all provision by government of income to meet social needs is provided without contribution but this is not the general case.

2. Types of social benefits

9.99 Social benefits may be paid under three different sorts of institutional arrangements. They may be paid by government as either social assistance or social security or they may be paid by other social insurance schemes. Pensions under all three arrangements are recorded in a similar way but with a distinction drawn between those that are made under social assistance and those that are made under social insurance. Non-pension benefits payable in cash are also recorded in a similar way but with a distinction drawn between those that are made under social assistance and those that are made under social insurance. Non-pension benefits payable in kind are recorded differently for those payable by government, whether as social assistance or social security.

Pensions

9.100 The main social benefit payable in cash is pension provision for retirees. However, others may be entitled to pensions, for example widows and the permanently disabled. Pensions are almost always paid in cash though

there may be some circumstances where housing is available free or at a reduced rate to some pensioners in which case the value of this housing benefit is treated as part of the cash payment with the same amount showing as purchase of housing services from the provider.

9.101 As noted, pensions payable under social insurance pensions are distinguished from those payable as social assistance.

Non-pension benefits payable in cash

9.102 While the nature of a pension payment is generally unambiguous, other social insurance payments must be carefully distinguished from other payments made to households. Once the latter payments are eliminated, non-pension benefits in cash are recorded under social insurance non-pension benefits and social assistance benefits in cash.

Receivables by households that are not social benefits

9.103 Government may make payments to a household in respect of the production activities of the household. An example might be a payment to encourage the production of a particular agricultural crop. Such payments are treated as subsidies to the household enterprise. Less common, but conceptually possible, is if government makes a payment to permit the household to acquire a fixed asset for use in production, this would be recorded as an investment grant (a capital transfer).

9.104 An employer, whether government or not, may provide an employee with equipment that is necessary to carrying out the labour services the employee provides. Examples are uniforms or small tools, such as scissors for hairdressers or bicycles for delivering mail. This equipment is recorded as intermediate consumption of the employing enterprise and is never recorded as being acquired by the household to which the employee belongs. The same convention applies to services provided to employees carrying out their tasks, for example the cost of food and hotel accommodation when travelling on business is treated as intermediate consumption of the employer and not final consumption of the employee.

9.105 When an employer makes available to the employee a good or service that the employee does use other than in the course of his employment, these goods and services are treated as the provision of wages and salaries in kind that are recorded as being in cash with corresponding expenditure by the employees on the goods and services. Examples include the provision of free housing or making a car available to the employee to use for personal purposes as well as for business. Typically the value of these goods and services will be treated as part of the employee's income for tax purposes.

9.106 Households may receive significant gifts from other households, both resident in the same economy and abroad, or may receive compensation from another unit in respect of an injury sustained or wrongful arrest, for example. Even though these payments may enable the household to improve their standard of living (as might a lottery win also) they are not treated as social benefits in the integrated framework of the SNA. Other current transfers, both those payable and receivable by households and other sectors of the economy also, are discussed in more detail in section G.

Non-pension benefits payable in kind

9.107 All benefits arising from social insurance schemes other than social security are recorded as if they are received in cash. Even if the employee does not initially pay for health treatment, for example, but simply sends the bill to his social insurance scheme for payment by them, the amount paid by the social insurance scheme is recorded as paid to the employee and the expenditure on the health service is then recorded as being undertaken by the employee. The rationale for this is that a private social insurance scheme operates simply as a financial corporation and cannot have final consumption expenditure. Some services provided by an employer are regarded as intermediate consumption by the employer, for example a medical service at the workplace to provide assistance to someone falling ill at work or training that it is in the interests of the employer that the employee should undertake. However, general health and education provision via a social insurance scheme are part of the compensation package of the employee and not part of the intermediate

consumption of the employer.

Benefits provided in kind by government

9.108 Social benefits paid in cash allow households to use this cash indistinguishably from income coming from other sources. When social benefits are payable in kind, the household has no discretion over the use of the benefit; the benefits simply relieve the household from having to meet these expenses out of income from other sources. However, governments all over the world take on responsibility to provide households with services they can make use of, but not trade for other services or exchange them with other households. These are the individual services provided by government to households either free or at prices that are not economically significant. These benefits are described as social transfers in kind. They are recorded not in the income transfers other than social transfers in kind account but in the social transfers in kind account as described below in section H.

9.109 A special case of benefits payable in kind is that of reimbursements, when the household initially makes a cash outlay but the government reimburses some or all of the expense. For example, when a payment is made by an employee or other member of a resident household for health or education benefits and these are subsequently reimbursed by government, they are not shown as a social insurance benefit and thus as part of remuneration of employees but as part of the expenditure by government on health services provided to individual household members. The expenditure by government on individual services is part of government final consumption expenditure and not part of household final consumption expenditure nor of remuneration of employees.

9.110 If a household is reimbursed by government for only a part of the health (or other) services provided, the part that is reimbursed is treated as government final consumption expenditure and the part that is not reimbursed by government as household final consumption expenditure. Only if the employer explicitly agrees to reimburse the part of the expenditure not reimbursed by government is it treated as part of remuneration of employees.

9.111 All social benefits in kind provided by government are treated in the same way with no attempt made to separate these into social security and social assistance.

3. Social benefits recorded in the income transfers other than social transfers in kind account

9.112 Taking the foregoing considerations into account, social benefits recorded in the income transfers other than social transfers in kind account are structured as follows:

- Social benefits other than social transfers in kind
  - Social security benefits in cash
    - Social security pension benefits
    - Social security non-pension benefits in cash
  - Other social insurance benefits
    - Other social insurance pension benefits
    - Other social insurance non-pension benefits
  - Social assistance benefits in cash.

9.113 ***Social security benefits in cash (D621) are social benefits payable in cash by social security funds to households, requiring the participation in a social insurance scheme through the payment of social contributions.*** The benefits are divided between pensions and non-pension benefits.

9.114 ***Other social insurance benefits (D622) are social benefits payable by social insurance schemes to households, requiring the participation, through the payment of social contributions, in a social insurance scheme other than a social security scheme.*** The benefits are divided between pensions and non-pension

benefits.

9.115 ***Social assistance benefits in cash (D623) are social benefits payable in cash by government units or non-profit institutions serving households (NPISHs) to households, to meet the same needs as social insurance benefits but without any requirement to participate in a social insurance scheme through the payments of social contributions.*** They therefore exclude all benefits paid by social security funds.

9.116 Social assistance benefits do not include current transfers paid in response to events or circumstances that are not normally covered by social insurance schemes. Thus, social assistance benefits do not cover transfers in cash or in kind made in response to natural disasters such as drought, forest fires, floods, earthquakes or hurricanes. Such transfers are recorded separately under other current transfers.

9.117 Table 9.4 shows table 9.1 with the disaggregation of social benefits described here.

Table 9.4: The income transfers other than social transfers in kind account - with details of social benefits – expenditures

Expenditures

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
	Current transfers	98	277	248	582	7	1 212	17		1 229
D5	Current taxes on income, wealth, etc.	24	10	0	178	0	212	1		213
D61	Social contributions less service charges				333		333	0		333
D62	Social benefits other than social transfers in kind	62	205	112	0	5	384	0		384
D621	Social security benefits in cash			53			53	0		53
D6211	Social security pension benefits			45			45	0		45
D6212	Social security non-pension benefits in cash			8			8	0		8
D622	Other social insurance benefits	62	205	7	0	5	279	0		279
D6221	Other social insurance pension benefits	49	193	5	0	3	250	0		250
D6222	Other social insurance non-pension benefits	13	12	2	0	2	29	0		29
D623	Social assistance benefits in cash			52			0			0
D7	Other current transfers	12	62	136	71	2	283	16		299
B6g	Disposable income, gross	222	25	335	1 219	40	1 841			1 841
B6n	*Disposable income, net*	35	13	308	1 196	37	1 589			1 589

Table 9.4 (cont): The income transfers other than social transfers in kind account - with details of social benefits - revenues

Revenues

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
B5g	Balance of earned incomes, gross / National income, gross	248	27	216	1 381	7	1 879			1 879
B5n	*Balance of earned income, net / National income, net*	61	15	189	1 358	4	1 627			1 627
	Current transfers	72	275	367	420	40	1 174	55		1 229
D5	Current taxes on income, wealth, etc.			213			213	0		213
D61	Social contributions less service charges	66	213	50	0	4	333	0		333
D62	Social benefits other than social transfers in kind				384		384	0		384
D621	Social security benefits in cash				53		53	0		53
D6211	Social security pension benefits				45		45	0		45
D6212	Social security non-pension benefits in cash				8		8	0		8
D622	Other social insurance benefits				279		279	0		279
D6221	Other social insurance pension benefits				250		250	0		250
D6222	Other social insurance non-pension benefits				29		29	0		29
D623	Social assistance benefits in cash				0		0			0
D7	Other current transfers	6	62	104	36	36	244	55		299

G. Other current transfers

9.118 Other current transfers consist of all current transfers between resident institutional units, or between residents and non-residents, except for current taxes on income, wealth, etc. and social contributions and benefits. Social transfers in kind are also not included, and recorded in a separate category. Other current transfers include a number of different kinds of transfers serving quite different purposes. The four categories are insurance-related transactions, transfers within government, current international cooperation and miscellaneous current transfers. Each of these is described in turn below.

9.119 Table 9.5 shows table 9.1 with this disaggregation of current transfers.

1. Insurance-related transactions

9.120 There are three types of transactions included under the heading of insurance. These are premiums less service charges and claims related to non-life direct insurance, premiums less service charges and claims related to non-life reinsurance, and payments related to standardized guarantees. Each of these is described below. A more detailed description of transactions to be recorded for insurance appears in chapter 24 on Insurance and pensions and for standardized guarantees in chapter 25 on Selected issues in financial instruments.

9.121 It should be noted that in this context “less service charges” as applied to premiums implies that the service charge for the insurance services has been deducted from actual premiums earned plus premium supplements. There is no netting between direct insurance and reinsurance; each is recorded in full and separately from the other.

Table 9.5: The income transfers other than social transfers in kind account - with details of current transfers – expenditures

Expenditures

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
	Current transfers	98	277	248	582	7	1 212	17		1 229
D5	Current taxes on income, wealth, etc.	24	10	0	178	0	212	1		213
D61	Social contributions less service charges				333		333	0		333
D62	Social benefits other than social transfers in kind	62	205	112	0	5	384	0		384
D7	Other current transfers	12	62	136	71	2	283	16		299
D71	Non-life insurance premiums less service charges	8	13	4	31	0	56	2		58
D711	Non-life direct insurance premiums less service charges	8	0	4	31	0	43	1		44
D712	Non-life reinsurance premiums less service charges		13				13	1		14
D72	Non-life insurance claims		48				48	12		60
D721	Non-life direct insurance claims		45				45	0		45
D722	Non-life reinsurance claims		3				3	12		15
D73	Current transfers within general government			96			96	0		96
D74	Current international cooperation			31			31	1		32
D75	Miscellaneous current transfers	4	1	5	40	2	52	1		53
D751	Current transfers to NPISHs	1	1	5	29	0	36	0		36
D752	Current transfers between resident and non-resident households				7		7	1		8
D759	Other miscellaneous current transfers	3	0	0	4	2	9	0		9
B6g	Disposable income, gross	222	25	335	1 219	40	1 841			1 841
B6n	*Disposable income, net*	35	13	308	1 196	37	1 589			1 589

Table 9.5 (cont): The income transfers other than social transfers in kind account - with details of current transfers – revenues

Revenues

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
B5g	Balance of earned incomes, gross / National income, gross	248	27	216	1 381	7	1 879			1 879
B5n	*Balance of earned income, net / National income, net*	61	15	189	1 358	4	1 627			1 627
	Current transfers	72	275	367	420	40	1 174	55		1 229
D5	Current taxes on income, wealth, etc.			213			213	0		213
D61	Social contributions less service charges	66	213	50	0	4	333	0		333
D62	Social benefits other than social transfers in kind				384		384	0		384
D7	Other current transfers	6	62	104	36	36	244	55		299
D71	Non-life insurance premiums less service charges		47				47	11		58
D711	Non-life direct insurance premiums less service charges		44				44			44
D712	Non-life reinsurance premiums less service charges		3				3	11		14
D72	Non-life insurance claims	6	15	1	35	0	57	3		60
D721	Non-life direct insurance claims	6		1	35		42	3		45
D722	Non-life reinsurance claims		15				15	0		15
D73	Current transfers within general government			96			96	0		96
D74	Current international cooperation			1			1	31		32
D75	Miscellaneous current transfers	0	0	6	1	36	43	10		53
D751	Current transfers to NPISHs					36	36			36
D752	Current transfers between resident and non-resident households				1		1	7		8
D759	Other miscellaneous current transfers			6			6	3		9

Non-life direct insurance premiums less service charges

9.122 Non-life direct insurance policies provide cover against various events or accidents resulting in damage to goods or property or harm to persons as a result of natural or human causes (for example, fires, floods, crashes, collisions, sinkings, theft, violence, accidents, sickness, etc.) or against financial losses resulting from events such as sickness, unemployment, accidents, etc. Such policies are taken out by enterprises, government units, NPISHs or individual households. The policies taken out by individual households are those taken out on their own initiative and for their own benefit, independently of their employers or government and outside any social insurance scheme. ***Non-life insurance premiums less service charges (D71) comprise the sum of actual non-life insurance (or reinsurance) premiums payable by policyholders to obtain insurance cover during the accounting period (actual premiums earned) and the premium supplements payable out of the investment income attributed to insurance policyholders less the service charges payable to the insurance corporation.*** The way in which the service charges are calculated is explained in paragraphs 7.205 to 7.212. After deducting the service charges from the sum of non-life insurance actual premiums and premium supplements, the remainder is described as non-life insurance premiums less service charges. Only the non-life insurance premiums less service charges constitute current transfers and are recorded in the income

transfers other than social transfers in kind account. The service charges constitute purchases of services by the policyholders and are recorded as intermediate or final consumption, as appropriate.

Non-life insurance claims

9.123 ***Non-life insurance claims (D72) are the amounts payable in settlement of injuries or damages that result from an event covered by a non-life insurance (or reinsurance) policy occurring in the period for which the policy is valid. In the case of major catastrophic events, some proportion of the claims may be recorded as capital transfers.*** Claims normally become due at the moment when the eventuality occurs that gives rise to a valid claim under the terms of the policy. An exception is made in cases where the possibility of making a claim is recognized only long after the event has happened. For example, an important series of claims were recognized only when exposure to asbestos was established as a cause of serious illness. In such cases the claim is recorded at the time that the insurance company accepts the liability. This may not be the same time as when the size of the claim is agreed on or when the claim is paid.

9.124 The settlement of a non-life insurance claim is treated as a transfer to the claimant. The claimant is usually but not invariably the policyholder. Claims are usually treated as current transfers, even when large sums may be involved as a result of the accidental destruction of a fixed asset or serious personal injury to an individual. The amounts received by claimants are usually not committed for any particular purpose and goods or assets that have been damaged or destroyed need not necessarily be repaired or replaced.

9.125 Some claims arise because of damages or injuries that the policyholders cause to the property or persons of third parties, for example, the damages or injuries that insured drivers of vehicles may cause to other vehicles or persons. In these cases, valid claims are recorded as being payable directly by the insurance enterprise to the injured parties and not indirectly via the policyholder.

9.126 In exceptional circumstances, some proportion of claims may be recorded not as current transfers but as capital transfers. The description of the functioning of the insurance activity in chapter 24 on Insurance and pensions explains when this is deemed to be appropriate.

Non-life reinsurance premiums less service charges and non-life reinsurance claims

9.127 Direct insurers provide a means of redistribution amongst regular policyholders. Instead of a large loss on an irregular basis, policyholders face regular smaller costs in the knowledge that, when and if a large loss happens, it will be settled by the insurance company and thus avoid the policyholder from bearing a large loss in that year. Reinsurance policies work in the same way to allow direct insurers (and other reinsurers) to protect themselves against particularly heavy claims by taking out a policy with another insurance corporation that specializes in reinsurance.

9.128 Non-life reinsurance premiums less service charges and non-life insurance claims are calculated in exactly the same manner as non-life direct insurance premiums and claims. However, because the reinsurance business is concentrated in a few countries, globally most reinsurance policies are with non-resident units.

Fees and calls under standardized guarantees

9.129 Some units, especially government units, may provide a guarantee against a creditor defaulting in conditions that have many of the same characteristics as non-life insurance. This happens when many guarantees of the same sort are issued and it is possible to make a realistic estimate of the probable level of defaults overall. In this case, the fees payable (and the property income earned on them) are treated in the same way as non-life insurance premiums and the calls under the guarantees are treated in the same way as non-life insurance claims. Chapter 25 on Selected issues in financial instruments discusses the topic of standardized guarantees in detail.

9.130 Standardized guarantees provide cover only for financial instruments and do not extend to product warranties.

2. Current transfers within general government

9.131 ***Current transfers within general government (D73) consist of current transfers between different government units, such as frequently occur between central and state or local government units, and between general government and social security funds.*** They do not include transfers of funds committed to finance gross fixed capital formation, such transfers being treated as capital transfers.

9.132 One government unit may act as an agent on behalf of a second government unit by, for example, collecting taxes that are due to the second unit, at the same time as it collects its own taxes. Taxes collected on behalf of the second unit in this way are to be recorded as accruing directly to the second unit and are not to be treated as a current transfer from the first to the second unit. Delays in remitting the taxes from the first to the second government unit give rise to entries under "other accounts receivable or payable" in the financial account.

3. Current international cooperation

9.133 ***Current international cooperation (D74) consists of current transfers in cash or in kind between the governments of different countries or between governments and international organisations***. These include:

a. Transfers between governments that are used by the recipients to finance current expenditures, including emergency aid after natural disasters; they include transfers in kind in the form of food, clothing, blankets, medicines, etc.;

b. Annual or other regular contributions paid by member governments to international organisations (excluding taxes payable to supranational organisations);

c. Payments by governments or international organisations to other governments to cover the salaries of those technical assistance staff who are resident in the country in which they are working and are employed by the host government.

Current international cooperation does not cover transfers intended for purposes of capital formation, such transfers being recorded as capital transfers.

4. Miscellaneous current transfers

9.134 ***Miscellaneous current transfers (D75) consist of current transfers, in cash or in kind, other than current taxes on income, wealth, etc, social contributions less service charges and social benefits, non-life insurance premiums less service charges and non-life insurance claims, current transfers within general government and current international cooperation***. Some of the more important examples are described below.

Current transfers to NPISHs

9.135 Current transfers to NPISHs consist of transfers received by NPISHs from other resident or non-resident institutional units in the form of membership dues, subscriptions, voluntary donations, etc. whether made on a regular or occasional basis. Transfers to NPISHs are intended to cover the costs of the non-market production of NPISHs or to provide the funds out of which current transfers may be made to resident or non-resident households in the form of social benefits. Transfers in the form of gifts of food, clothing, blankets, medicines, etc. to charities for distribution to resident or non-resident households are included to the extent that they are newly acquired and are treated as transfers in cash used to purchase these commodities. Gifts of unwanted or used articles from households typically do not have a market value and so do not feature in the accounts as transfers. Gifts of valuables are treated as transfers of the value of the valuable in the balance sheet. Payments of membership dues or subscriptions to market NPIs serving businesses, such as chambers of commerce or trade associations, are treated as payments for services rendered and are therefore not transfers (see paragraph 5.128). They are recorded in the production account as intermediate consumption and not in

the income transfers other than social transfers in kind account.

Current transfers between households

9.136 Current transfers between households consist of all current transfers made, or received, by resident households to or from other resident or non-resident households. The transfers include all cash transfers and the value of transfers in kind. In the context of remittances, current transfers between households are often referred to as personal transfers. They include regular remittances between households resident in different parts of the same country or in different countries, usually from a member of a family working in a foreign country for a period of a year or longer. Earnings remitted by border, seasonal, other short-term and remote workers to their families are not personal transfers as the workers remain resident in their country of origin (that is, they are still members of their original households) when they work abroad for periods of less than a year. Their earnings are recorded as remuneration of employees from abroad if they have the status of an employee in the non-resident country while they are working there or as the provision of services otherwise.

9.137 Transfers from non-resident households to resident households (and vice versa) are an item of considerable policy interest. Supplementary items in the balance of payments are suggested for personal remittances and total remittances. Personal remittances are equal to current and capital transfers in cash or in kind between resident households and non-resident households plus remuneration of employees received by non-resident employees in the economy of employment less taxes and social contributions paid and transport and travel expenditure related to working abroad. Total remittances from abroad are equal to personal remittances plus social benefits (including pensions due from abroad in relation to earlier work abroad by a member of the household). For more details, reference should be made to chapter 33 on Transactions and Positions between residents and non-residents and to annex 4 and chapter 13 of *BPM7*.

Fines and penalties

9.138 ***Fines and penalties are compulsory payments imposed on institutional units by courts of law or quasi-judicial bodies.*** However, fines or other penalties imposed by tax authorities for the evasion or late payment of taxes cannot usually be distinguished from the taxes themselves and are, therefore, grouped with the latter in practice and not recorded under this heading; nor are payments of fees to obtain government licences (see paragraphs 9.54 and 9.55).

9.139 Fines and penalties should be distinguished from compensation payments (see paragraph 9.146). While fines and penalties are compulsory payments that are punitive in nature, that is, are intended to punish and/or deter certain activities or behaviour, compensation payments are intended to remedy specific harms, such as property damage or loss of income. As such, it may be appropriate to treat certain fines and penalties that are identified in legal documents as a fine or penalty, but are actually intended to compensate for damages, as payments for compensation of damages. Fines and penalties are always recorded as a current transfer.

9.140 Given the number of appeals that often follow an initial ruling, fines and penalties should not be recorded until the unit issuing the fine or penalty has an unconditional claim to the funds. If a judgment or ruling is subject to further appeal, an unconditional claim only exists when the appeal is resolved. Fines and penalties accrued but not yet paid should be recorded as other accounts receivable/payable.

9.141 Some fines and penalties may be established in contracts of mergers and acquisitions where the contract may include contingent fines or penalties based on, for example, profitability, or a pending lawsuit, and resulting in a payment between the buyer and seller after the initial transaction. In these cases, the fines and penalties would be interpreted as an adjustment or update of the exchange value of the acquired enterprise, and treated as a (foreign) direct investment transaction (or a portfolio investment transaction if the buyer has less than 10 percent of the voting power), instead of a current transfer.

Lotteries and gambling

9.142 The amounts paid for lottery tickets or placed in bets consist of two elements: the payment of a service charge to the unit organizing the lottery or gambling and a residual current transfer that is paid out to the winners.

The service charge may be quite substantial and may have to cover taxes on the production of gambling services. The transfers are regarded in the integrated framework of the SNA as taking place directly between those participating in the lottery or gambling, that is, between households.

9.143 Some lotteries may be organized with three components, the two as just described and a third element that is donated to charity. This element shows as a transfer to the charity, usually an NPISH. The relevant transfers are recorded as taking place directly between those participating in the lottery or gambling and the NPISHs involved.

9.144 When non-resident households take part there may be significant net transfers between the household sector and the rest of the world.

9.145 In some cases the winner of a lottery does not receive a lump sum immediately but a stream of income over future periods. In the integrated framework of the SNA this should be recorded as the receipt of the lump sum and the immediate purchase of an annuity. The recording of annuities is described in chapter 24 on Insurance and pensions.

Compensation payments

9.146 ***Compensation payments consist of transfers paid by institutional units to other institutional units in compensation for injury to persons, damage to property or other losses (usually caused by the former) that are not settled as payments of non-life insurance claims.*** Compensation payments could be either compulsory payments awarded by courts of law, or ex gratia payments agreed out of court. This heading covers compensation for injuries or damages caused by other institutional units and ex gratia payments made by government units or NPISHs in compensation for injuries or damages caused by natural disasters. However, major compensation payments should be recorded as capital transfers (instead of current transfers) if they are intended to recover losses incurred over a multi-year period or to replace a financial or non-financial asset.

9.147 Regarding the time of recording of compensation payments, the same rules apply as the ones for fines and penalties (see paragraph 9.140).

Citizenship by investment programmes

9.148 Individuals may obtain an additional citizenship, or passport, by making economic contributions to another country. If these contributions take the form of non-refundable contributions to the government, nominated development funds, or possibly NPISHs, they should be recorded as current transfers, unless the contributions are specifically earmarked for capital investment projects. In the latter case, the contributions should be recorded as capital transfers.

H. Social transfers in kind

9.149 As explained in section A, the income transfers other than social transfers in kind account is concerned with how income is redistributed among sectors by means of transfers in cash or transfers that are treated as if they are in cash. However, there remains an important class of transfers that are recorded as a transfer of consumption expenditure originally undertaken by general government and NPISHs. These are described as social transfers in kind. ***Social transfers in kind (D63) consist of goods and services provided to households by government and NPISHs either free or at prices that are not economically significant***. These transfers are sufficiently distinctive that two separate accounts are devoted to recording them.

9.150 Social transfers in kind consist of final consumption expenditure undertaken by government and NPISHs on behalf of households. For this reason they are described as individual goods and services. This is in distinction from public goods such as defence and street lighting, which the integrated framework of the SNA refers to as collective services. (There is more discussion on the difference between individual and collective expenditure of government in chapter 10 on Use of income accounts.) There are two main reasons why government may choose to provide individual services to households. One is that by meeting the needs of

very large sections, or even all, of the population centrally there are cost efficiencies to be realized. The other is that the government can ensure that these services are available to the population at reasonable cost to households, prescribe the standards of the service to be observed and can insist that households avail themselves of the services, for example by requiring children to attend school.

9.151 For some analytical purposes, it is instructive to consider a measure of household consumption that includes the goods and services provided as social transfers in kind. The expanded view of consumption, though, must be matched by a similarly extended view of income since household saving is unaffected by this different perspective. In order to accommodate this different view of household income and consumption, the sequence of economic accounts introduces two accounts, one of which derives an alternative measure of income (the social transfers in kind account, described below). The second account shows the alternative measure of consumption (the use of disposable income adjusted for social transfers in kind account) and is described in chapter 10 on Use of income accounts.

1. The social transfers in kind account

9.152 The social transfers in kind account takes the balancing item of the income transfers other than social transfers in kind account, disposable income, and adjusts this for the value of social transfers in kind to reach a new balancing item called disposable income adjusted for social transfers in kind. For households, disposable income adjusted for social transfers in kind is higher than disposable income; for government and NPISHs, it is lower.

2. Social transfers in kind paid to non-residents

9.153 In principle, social transfers in kind may be paid to non-residents. One simple example is emergency medical care provided to a foreign tourist by a hospital within general government. However, just as non-resident households may benefit from social transfers in kind from the national government, so resident households may benefit from social transfers in kind paid by the government of another economy. In general these flows to non-residents will be small relative to the total level of social transfers in kind and, unless there is strong evidence to the contrary, by convention it may be assumed that the flows to non-residents are balanced by flows from governments (and NPISHs) of other economies. Subject to this convention, it is therefore the case that total disposable income for the total economy is exactly equal to total disposable income adjusted for social transfers in kind.

Chapter 10: Use of income accounts

A. Introduction

10.1 The purpose of the use of income accounts is to show how households, government units, non-profit institutions serving households (NPISHs), and the central bank allocate their disposable income between final consumption and saving. Throughout this chapter, unless otherwise stated, the expression consumption should be taken to mean final consumption. There are two use of income accounts that correspond to two concepts of disposable income and consumption. In the first account, the use of disposable income account, shown in table 10.1, attention is focused on disposable income and the expenditure on consumption goods and services that can be met out of that income. In the second account, the use of disposable income adjusted for social transfers in kind account, shown in table 10.2, attention is focused on the consumption goods and services acquired and used by institutional units, especially households, whether acquired by expenditure or by social transfers in kind. To explain the difference between the two accounts it is necessary to define some key terms.

10.2 ***A consumption good or service is defined as a good or service that is used (without further transformation in production as defined in the integrated framework of the SNA) by households, government units, the central bank and non-profit institutions serving households (NPISHs) for the direct satisfaction of individual needs (or wants) or for the collective needs of members of the community.***

10.3 ***An individual consumption good or service is a good or service that is acquired by a household and used to satisfy the needs or wants of members of that household.*** Individual goods and services can always be bought and sold on the market, although they may also be provided free, or at prices that are not economically significant, as social transfers in kind. In practice, all goods and most services are individual.

10.4 ***A collective consumption service is a service provided simultaneously to all members of the community or to all members of a particular section of the community, such as all households living in a particular region.*** Collective services are automatically acquired and consumed by all members of the community, or section of the community, without any action on their part. Typical examples are public administration and the provision of security, either at a national or local level. Collective services are the "public goods" of economic theory. By their nature, collective services cannot be sold to individuals on a market, and they are financed by government units or the central bank out of taxation or other revenues. The differences between individual and collective consumption goods or services are elaborated further in paragraphs 10.93 to 10.100.

10.5 Some of the services provided by NPISHs to the members of the associations that own them have some of the characteristics of collective services; for example, some research carried out by NPISHs may benefit all members of the community. However, most of the services provided by NPISHs are individual in nature and, if it is not practicable to identify the outputs of NPISHs that may be considered to be collective in nature, all the services provided by NPISHs may be treated as individual.

10.6 As explained in later sections of this chapter, expenditure is attributed to the institutional units that bear the costs even if they are not the units to whom the goods or services are delivered. Thus, expenditures that government units or NPISHs make on individual goods and services that they provide to households as social transfers in kind are recorded as final consumption expenditure incurred by government units or NPISHs. Although they do not physically consume the goods and services provided as social transfers in kind, government units or NPISHs are the units that pay for them and take the decisions about the amounts to be provided. Information about their expenditure on such goods and services must, therefore, be recorded in the sequence of economic accounts in conjunction with their disposable income. However, merely to record the expenditure is not sufficient when the goods and services are consumed by units different from those that control and finance the expenditure. In order to identify the units that benefit from their consumption it is necessary to recognize that the goods and services are in fact transferred to, and used by, households. From this stems the distinction between final consumption expenditure and actual final consumption.

10.7 In the use of disposable income account, the main revenue is disposable income, which is the balancing item carried forward from the income transfers other than social transfers in kind account. The main use is final consumption expenditure. ***Final consumption expenditure (P3) is the amount of expenditure on***

consumption goods and services, whether individual or collective. Final consumption expenditure can be measured for households, general government, the central bank and non-profit institutions serving households (NPISHs). In the use of disposable income adjusted for social transfers in kind account, the main revenue is disposable income adjusted for social transfers in kind, which is the balancing item carried forward from the social transfers in kind account. The main expenditure is actual final consumption. ***Actual final consumption (P4) measures the amount of consumption goods and services, whether individual or collective, acquired. Actual final consumption can be measured for households, general government, the central bank and non-profit institutions serving households (NPISHs).***

10.8 In the social transfers in kind account, described in chapter 9 on Transfer income accounts, the disposable income adjusted for social transfers in kind of households is derived from their disposable income by adding the value of social transfers in kind receivable, while that for government units and NPISHs it is derived by subtracting the value of social transfers in kind payable. Corresponding to the social transfers in kind account, is the use of disposable income adjusted for social transfers in kind account in which the actual final consumption of households is derived from their final consumption expenditure by adding the value of social transfers in kind receivable, while the actual final consumption of government units and NPISHs is derived by subtracting the value of social transfers in kind payable. Thus there are two accounts describing the derivation of disposable income in the sequence of economic accounts of the SNA and two use of income accounts.

10.9 In both the use of disposable income account and the use of disposable income adjusted for social transfers in kind account, an adjustment item is needed in order to show the change in pension and non-pension entitlements recorded in the financial account. Saving is the balancing item for both the use of disposable income account and the use of disposable income adjusted for social transfers in kind account. It is calculated as disposable income adjusted for the change in pension and non-pension entitlements less final consumption expenditure, or as disposable income adjusted for social transfers in kind, which is also adjusted for the change in pension and non-pension entitlements, less actual final consumption. It follows that saving is the same whether it is calculated in the use of disposable income account or the use of disposable income adjusted for social transfers in kind account.

10.10 For saving, as well as disposable income and disposable income adjusted for social transfers in kind, net figures, i.e., after deducting depreciation and depletion, are conceptually preferable and although there may be measurement challenges the compilation of estimates on a net basis is strongly encouraged.

10.11 With the exception of the central bank, which produces and consumes collective services, corporations do not have final consumption expenditure. They may purchase the same kinds of goods or services as households use for final consumption (for example electricity or food) but such goods or services are either used for intermediate consumption or provided to employees as remuneration in kind. It is assumed in the integrated framework of the SNA that corporations do not make transfers of consumption goods or services to households. As corporations neither make nor receive social transfers in kind, it is also not possible to draw a meaningful distinction between their disposable income and their disposable income adjusted for social transfers in kind. It follows that both the use of disposable income account and the use of disposable income adjusted for social transfers in kind account for corporations are only dummy accounts that contain no entries for final consumption expenditure or actual final consumption. Apart from the adjustment item for pension and non-pension entitlements referred to above and explained in more detail in paragraphs 10.20 to 10.25, the gross or net saving of corporations must be equal to their gross or net disposable income, or their disposable income adjusted for social transfers in kind. As noted before, an exception is made for the central bank, where the final consumption of the collective services produced by them needs to be accounted for. In other contexts, the saving of corporations is often described as the "retained earnings" or "undistributed incomes" of corporations.

1. The use of disposable income account

10.12 As shown in table 10.1, the use of disposable income account contains only three main entries apart from the balancing item, saving. Disposable income, the balancing item carried forward from the income transfers other than social transfers in kind account, is recorded on the right-hand side of the account under revenues, while final consumption expenditure is recorded on the left-hand side under expenditures. As just noted, the

account is only relevant for the four sectors that incur final consumption expenditure, namely the general government, financial corporations (i.e., the central bank), NPISHs and household sectors.

10.13 The balancing item for the account is saving. Before the balance is struck, however, an adjustment item showing the adjustment for the change in pension and non-pension entitlements is entered in order to reallocate a certain amount of saving between sectors. This item is needed because of the way in which pension contributions and benefits are recorded in the income transfers other than social transfers in kind accounts. The adjustment item may also include some minor amounts of changes in non-pension entitlements related to social insurance schemes. (For more details, see chapter 24 on Insurance and pensions.) The adjustment item is shown on the right-hand side under revenues for households and on the left-hand side under expenditures for financial corporations or other units responsible for (non-)pension liabilities.

10.14 Final consumption expenditure is shown in table 10.1, disaggregated between individual consumption expenditure and collective consumption expenditure to bring out the accounting interrelationships described below. However, it is usually desirable to break down final consumption expenditure using a classification of expenditure by purpose or by type of good or service. Most users will expect at least some degree of disaggregation, for example, between expenditures on goods or services or between expenditures on durable and non-durable goods. Disaggregation by type of goods and services is needed for the supply and use tables, as explained in chapter 15.

Table 10.1: The use of disposable income account – expenditures

Expenditures

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
P3	Final consumption expenditure		2	362	1 015	35	1 414			1 414
P31	Individual consumption expenditure			184	1 015	34	1 233			1 233
P32	Collective consumption expenditure		2	178		1	181			181
D8	Adjustment for the change in pension and non-pension entitlements	0	11	0		0	11	0		11
B8g	Saving, gross	222	12	- 27	215	5	427			427
B8n	*Saving, net*	35	0	- 54	192	2	175			175
B12	*Current external balance*							- 13		- 13

Table 10.1 (cont): The use of disposable income account - revenues

Revenues

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
B6g	Disposable income, gross	222	25	335	1 219	40	1 841			1 841
B6n	*Disposable income, net*	35	13	308	1 196	37	1 589			1 589
P3	Final consumption expenditure								1 414	1 414
P31	Individual consumption expenditure								1 233	1 233
P32	Collective consumption expenditure								181	181
D8	Adjustment for the change in pension and non-pension entitlements				11		11	0		11

2. The use of disposable income adjusted for social transfers in kind account

10.15 As shown in table 10.2, the use of disposable income adjusted for social transfers in kind account also contains three main entries apart from the balancing item, saving. Disposable income adjusted for social transfers in kind, the balancing item brought forward from the social transfers in kind account, is recorded on the right-hand side of the account under revenues, while actual final consumption is recorded on the left-hand side under expenditures. As with the use of disposable income account, before the balancing item, saving, is struck, the adjustment for the change in pension and non-pension entitlements is entered. The account is relevant mainly for the general government, financial corporations (i.e., the central bank), NPISHs and household sectors.

10.16 The actual final consumption of households is obtained by augmenting their final consumption expenditure by the value of social transfers in kind receivable, while that for government units and NPISHs is obtained by subtracting from their final consumption expenditure the value of social transfers in kind payable. Some social transfers in kind may be receivable by non-residents, for example emergency medical treatment in a public hospital for a non-resident tourist, but the figures involved are likely to be relatively small compared with total social transfers in kind. Further, residents abroad may also benefit from social transfers in kind from a non-resident government (or NPISH) in like manner. Unless there is strong reason to believe otherwise, therefore, it is assumed these two figures offset one another so that all social transfers in kind can be shown as payable to resident households. Thus, the value of actual final consumption for the total economy is equal to that of total final consumption expenditure.

10.17 The actual final consumption of households is a measure of the value of the consumption goods and services acquired by households, whether by purchase or by transfer from government units or NPISHs, and used by households for the satisfaction of their needs (or wants). It is therefore a better indicator of their living standards than their final consumption expenditure. In some countries, the value of the individual non-market goods and services provided to households as social transfers in kind may be quite large, depending upon the kinds of economic and social policies pursued by their governments, so that the value of the actual final consumption of households may exceed that of their expenditure by a significant margin. For these reasons, the actual final consumption of households has sometimes been described as their “enlarged” consumption or their “total” consumption, although these terms are not used in the SNA. The actual final consumption of the general government sector is correspondingly smaller than government final consumption expenditure.

Table 10.2: The use of disposable income adjusted for social transfers in kind account – expenditures

Expenditures

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
P4	Actual final consumption		2	178	1 233	1	1 414			1 414
P41	Actual individual consumption				1 233		1 233			1 233
P42	Actual collective consumption		2	178		1	181			181
D8	Adjustment for the change in pension and non-pension entitlements	0	11	0		0	11	0		11
B8g	Saving, gross	222	12	- 27	215	5	427			427
B8n	*Saving, net*	35	0	- 54	192	2	175			175
B12	*Current external balance*							- 13		- 13

Table 10.2 (cont): The use of disposable income adjusted for social transfers in kind account - revenues

Revenues

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
B7g	Disposable income adjusted for social transfers in kind, gross	222	25	151	1 437	6	1 841			1 841
B7n	*Disposable income adjusted for social transfers in kind, net*	35	13	124	1 414	3	1 589			1 589
P4	Actual final consumption								1 414	1 414
P41	Actual individual consumption								1 233	1 233
P42	Actual collective consumption								181	181
D8	Adjustment for the change in pension and non-pension entitlements				11		11	0		11

3. The relationship between the two versions of the use of income account

10.18 The two use of income accounts are neither sequential nor hierarchical. They are parallel accounts that serve different analytical or policy purposes. One shows which units incur expenditure; the other which unit benefits from the expenditure and the extent to which households' consumption levels are provided by themselves. The values of the goods and services involved in social transfers in kind are recorded in two different ways in the sequence of economic accounts, both of which represent uses of resources by

government units or NPISHs:

a. As final consumption expenditure, payable by government units or NPISHs; and

b. As social transfers in kind, payable by government units or NPISHs but receivable by households and recorded as part of their actual final consumption.

10.19 Although the difference between disposable and disposable income adjusted for social transfers in kind is attributable to social transfers in kind, even disposable income should not be interpreted as if it were a measure of income available in cash. Its several non-cash elements, such as those associated with production for own final consumption or remuneration in kind, were pointed out in paragraphs 9.22 and 9.23.

4. Adjustment for the change in pension and non-pension entitlements

10.20 As individuals accrue pension and non-pension entitlements in a social insurance scheme throughout their working lives, the corresponding entitlements become their assets and the liabilities of the units ultimately responsible for paying the pensions or other relevant social insurance benefits. Pensions and other social benefits due under social assistance are excluded because the amounts due do not necessarily accrue in a predictable fashion over time or for predictable reasons. Similar arguments apply to social benefits due under social security. In some countries, government assumes responsibility for paying pensions even for non-government employees and self-employed persons, and these pensions are paid via social security funds. There is detailed discussion in chapter 24 on Insurance and pensions about when the liabilities for these schemes can be integrated into the sequence of economic accounts and when they only appear in a supplementary table. In this chapter, the expression "pension scheme" is used to cover those parts of social security schemes where liabilities can be integrated into the sequence of economic accounts, including the accumulation accounts and balance sheets, together with all other social insurance schemes. As noted in paragraph 10.13, this may also relate to non-pension social insurance schemes, although the relevant amounts are typically quite marginal.

10.21 Pension schemes (and some other non-pension related schemes) are treated in the sequence of economic accounts of the SNA as having liabilities towards the households with claims on the schemes. The payments of the contributions into the schemes and the receipts of benefits by the beneficiaries constitute the acquisition and disposal of financial assets. However, this may not accord with the perception of the households concerned, especially the beneficiaries' households, who tend to regard the benefits they receive as income in the form of current transfers. Moreover, at least some social benefits received under social security schemes and those received under social assistance are in fact treated as current transfers in the sequence of economic accounts.

10.22 In order to present income information that may be more useful for analysing the behaviour of the households concerned, the payments of the relevant contributions and the receipts of the relevant benefits by the beneficiaries' households are recorded in the income transfers other than social transfers in kind account as social contributions and social insurance benefits, respectively, as well as being recorded in the financial account as changes in pension entitlements or as changes in entitlements for non-pension social insurance benefits. As a consequence of the recording of the relevant contributions and benefits as current transfers, the level of disposable incomes of households is affected.

10.23 The rationale for treating pension contributions and benefits (as well as some other non-pension related social insurance contributions and benefits) as current transfers is that, when looked at for the economy as a whole, the effect of the relevant provision can be seen as if it were a redistributive process among households. To the extent that contributions and benefits are not exactly equal, there is an impact on household saving. For example, if households as a whole pay more contributions than they receive as benefits, their saving is reduced by this difference. Similarly if household benefits exceed their contributions, saving does not reflect the fact that the negative change in entitlements represents a reduction in net worth. However, as is clear in the financial account, the change in pension and non-pension entitlements is part of household net worth. It is therefore necessary to adjust saving for the difference between contributions payable and benefits receivable shown in the income transfers other than social transfers in kind account.

10.24 An item described as the adjustment for the change in pension and non-pension entitlements therefore appears

in both the use of disposable income account and the use of the disposable income adjusted for social transfers in kind account. Without making explicit reference to relevant non-pension related schemes, it is equal to:

the total value of the actual and imputed social contributions payable into pension schemes

plus the total value of contribution supplements payable out of the investment income attributed to pension fund beneficiaries

minus the value of the associated service charges

minus the total value of the pensions paid out as social insurance benefits by pension schemes.

10.25 Opposite adjustments are needed in the use of income accounts of the units responsible for paying pensions (or some other non-pension related social insurance benefits). These adjustments can affect non-resident institutional units, both households and the providers of the relevant social insurance benefits.

5. Saving

10.26 Saving is the balancing item in the two use of income accounts. Its value is the same whether it is derived as disposable income less final consumption expenditure or as disposable income adjusted for social transfers in kind less actual final consumption (in both cases, after making the adjustment for the change in pension and non-pension entitlements just described).

10.27 As already noted, non-financial and financial corporations, with the exception of the central bank, have no final consumption expenditure or actual final consumption. Their net saving is equal to their net disposable income, or their disposable income adjusted for social transfers in kind (apart from the adjustment item for pension and non-pension entitlements).

10.28 ***Saving (B8) represents that part of disposable income (adjusted for the change in pension entitlements) that is not spent on final consumption.*** For sectors with expenditures on final consumption, it may be positive or negative depending on whether disposable income exceeds final consumption expenditure, or vice versa. For other sectors, saving is equal to disposable income (adjusted for the change in pension and non-pension entitlements). Assuming that saving is positive (and in the absence of capital transfers), the unspent income must be used to acquire assets (possibly only an increase in cash) or reduce liabilities. If saving is negative, some financial or non-financial assets must have been liquidated (including a rundown of cash), or some liabilities increased. Thus, saving provides the link between the current accounts of the sequence of economic accounts and the subsequent accumulation of (economic) assets accounts.

10.29 If saving is zero, final consumption expenditure equals disposable income plus the change in pension and non-pension entitlements. In that case, the institutional unit is not obliged to dispose of any assets or increase any of its liabilities unless capital transfers are receivable or payable. As already indicated in chapter 9 on Transfer income accounts, disposable income can, therefore, be interpreted as the maximum amount that an institutional unit can afford to spend on final consumption goods and services in the accounting period without having to reduce its cash, liquidate other assets or increase its liabilities.

6. Calculating savings ratios

10.30 The savings ratio, especially for households, is a key economic variable. It is usually calculated by dividing saving by disposable income for the sector. However, the entry of the change in pension and non-pension entitlements in both the use of disposable income account and the use of disposable income adjusted for social transfers in kind account complicates this calculation. It is necessary to use not the balancing item from the income transfers other than social transfers in kind account (disposable income) or from the social transfers in kind account (disposable income adjusted for social transfers in kind) but to add the adjustment for the change in pension and non-pension entitlements to each of these figures to derive a figure for total disposable income or total disposable income adjusted for social transfers in kind. It is this total figure that should be the denominator in the savings ratio calculation.

B. Expenditures, acquisitions and consumption of goods and services

10.31 The distinction between final consumption expenditure and actual final consumption depends on the general distinction between expenditures on, and acquisitions of, goods and services. The purpose of this section is to explain not only how expenditure differs from acquisition but also how both of them differ from the actual or physical use of goods and services.

1. Expenditures

10.32 ***Expenditures on goods and services are defined as the values of the amounts that buyers pay, or agree to pay, to sellers in exchange for goods or services that sellers provide to them or to other institutional units designated by the buyers.*** The buyer incurring the liability to pay need not be the same unit that takes possession of the good or service. As already noted, it is common for government units or NPISHs to pay for goods or services that the sellers provide to households. Moreover, as explained below, the liability incurred by the buyer does not necessarily have to be settled by a payment of cash.

The timing of expenditures on goods and services

10.33 Expenditures on goods or services occur at the times when buyers incur liabilities to sellers. These are usually the times when:

a. The ownership of the good is transferred from the seller to the new owner; or

b. The delivery of a service by the producer is completed to the satisfaction of the consumer.

10.34 The times at which sellers are actually paid for the goods or services they deliver are not necessarily the times at which the expenditures occur. As explained in chapter 4 on Flows, stocks and accounting rules, payments may either precede, or lag behind, the actual deliveries of the goods or services sold. For this reason, the values of expenditures are measured by the values of the amounts receivable/payable at the times the expenditures are incurred. When payments take place before or after the expenditures are incurred, there must be consequential changes in the financial assets or liabilities (other than cash) of the two units concerned at the time the change of ownership takes place or the service is delivered.

10.35 The precise moment at which the ownership of a good is transferred, or delivery of a service is completed to the satisfaction of the consumer, may not be easy to determine in practice in some cases. It may be perceived differently, or even disputed, by the two parties concerned.

2. Acquisitions

10.36 Acquisitions of goods and services by institutional units occur when they become the new owners of the goods or when the delivery of services to them is completed. Acquisitions are valued at the transaction prices, or exchange prices, paid by the units that incur the expenditures. In most cases, the exchange price is the same as the observed market price. The value of the goods or services acquired by an institutional unit or sector consists of the value the goods or services acquired through its expenditure plus the value of goods or services received through social transfers in kind less the value of goods or services paid to other units as social transfers in kind.

10.37 The difference between final consumption expenditure and actual final consumption is exactly the difference between expenditures on consumption goods and services and acquisitions of consumption goods and services. Since all consumption goods and services must be both the subject of expenditure and also be acquired, this difference between final consumption expenditure and actual final consumption, sector by sector, explains the redistribution of goods and services by means of social transfers in kind.

10.38 The distinction between consumption expenditure and actual consumption and thus between expenditure and acquisitions is made only in respect of final consumption. The difference is explained exactly by social transfers in kind.

3. Consumption of goods and services

10.39 ***Consumption of goods and services is the act of completely using up the goods and services in a process of production or for the direct satisfaction of human needs or wants.*** The activity of consumption consists of the use of goods and services for the satisfaction of individual or collective human needs or wants. The satisfaction of needs or wants is immediate and direct in the case of final consumption; it is indirect and delayed in the case of intermediate consumption where goods and services are used to produce other goods and services that ultimately lead to the satisfaction of human needs or wants.

10.40 In the case of goods, the distinction between acquisition and use is clear. Producers acquire goods that they may hold for varying periods of time before physically using them up in processes of production. Households may hold consumption goods before using them for the satisfaction of their needs or wants. Few goods are so perishable that they have to be used immediately. For example, most foodstuffs need not be eaten until some time after they have been acquired.

10.41 In the case of services, however, the distinction between acquisition and use may not be relevant in a practical sense. The situations of units to whom services are delivered are automatically affected by those services and no further action may be needed in order to benefit from them.

Durable versus non-durable goods

10.42 In the case of goods, the distinction between acquisition and use is analytically important. It underlies the distinction between durable and non-durable goods that is used extensively in economic analysis. In fact, the distinction between durable and non-durable goods is not based on physical durability as such. Instead, the distinction is based on whether the goods can be used once only for purposes of production or consumption or whether they can be used repeatedly, or continuously. For example, coal is a highly durable good in a physical sense, but it can be burnt only once. Durable goods are goods that may be used repeatedly or continuously over a period of more than a year, assuming a normal or average rate of physical usage. ***Consumer durables are goods acquired by households which are used for purposes of consumption repeatedly or continuously over a period of a year or more, like vehicles, furniture or electrical equipment. They are used for consumption (final consumption expenditure) and not for production (fixed assets).***

Consumption as the using up of goods and services

10.43 A consumption function that expresses utility as a function of the quantities of goods and services consumed describes the using up of those goods and services rather than expenditures or acquisitions. In order to measure consumption as an activity, it would be necessary to adopt accounting procedures similar to those used in a production account, where a clear distinction is drawn between purchases of goods to be used in production and their subsequent use as inputs.

10.44 In practice, the integrated framework of the SNA measures household consumption by expenditures and acquisitions only. The repeated use of durables by households could be recognized only by extending the production boundary by postulating that the durables are gradually used up in hypothetical production processes whose outputs consist of services. These services could then be recorded as being acquired by households over a succession of time periods. However, durables are not treated in this way in the integrated framework of the SNA. A possible supplementary extension to the integrated framework of the SNA to allow for such an extension of the production boundary could usefully take place in an extended account.

C. Measuring the value of non-monetary transactions indirectly

10.45 By mutual agreement between the buyer and the seller, the liability incurred by the buyer may be discharged by providing a good, service or asset other than cash in exchange. For example, goods or services may be exchanged for each other in barter transactions, or employees may provide labour in exchange for goods or services received as remuneration in kind.

10.46 When the buyers do not pay cash, or expect to pay cash, values have to be imputed for the expenditures using

the appropriate prices of similar goods or services sold for cash on the market.

10.47 The value of goods produced and consumed within the same household as well as for those household services falling within the production boundary must also be measured indirectly.

10.48 In the interests of brevity, a transaction for which a value has to be imputed may be described as an "imputed expenditure" and this terminology is used below. Strictly speaking, however, the imputation refers to the value of goods or services involved and not to the expenditure itself. In other words it is the valuation that is imputed, not the fact that the transaction takes place. It is therefore preferable to refer to measuring the flows indirectly rather than by imputation.

1. Barter transactions

10.49 ***A barter transaction is a transaction where goods, services, or non-financial assets are exchanged for different goods, services, or non-financial assets without any accompanying monetary payment.*** The values of the goods or services acquired in barter transactions constitute imputed expenditures. Values have to be estimated indirectly for goods or services exchanged in barter transactions equal to their market values. Thus, when the goods or services obtained through barter are used for household consumption their estimated values must be recorded as household final consumption expenditure. When a good offered for barter is an existing good and not newly produced output, negative imputed expenditure must be recorded for the unit offering the good, in the same way that sales of existing goods are recorded as negative expenditures.

10.50 As crypto assets without a corresponding liability designed to act as a general medium of exchange, and those designed to act as a medium of exchange within a platform only (i.e., payment tokens without a corresponding liability) are classified as non-produced non-financial assets (see chapter 22 on Digitalisation), acquisitions of goods and services through payments using such assets are also a type of barter transaction. This does not hold for crypto assets with a corresponding liability, such as cryptocurrency issued or authorized by central banks (i.e., central bank digital currencies), which are classified as financial assets.

10.51 In barter, both parties to a transaction must be recorded as making expenditures. The value of these expenditures should be based on the purchasers' prices of these bartered products. In practice, neither taxes on products or transportation costs may apply, in which case the purchasers' prices will not differ from the basic prices of the products. As the values of the goods or services bartered may not be the same, the values imputed for the barter transaction may on pragmatic grounds be taken as a simple average of the estimated values of the goods or services exchanged, so that equal expenditures are recorded for both parties. Goods that have been the subject of a barter transaction may be subsequently bartered with another party at a higher price, earning a margin for the unit conducting both barter transactions. However, each barter transaction involves two parties only and no wholesale or retail margin.

2. Expenditures on goods and services received as income in kind

10.52 Income in kind received by employees is measured by the value of the goods and services provided by employers to their employees in remuneration for work done. Workers receiving remuneration in kind are treated as making expenditures equal to the market value of the goods or services received (at producers' prices if produced by the employer or at purchasers' prices if bought by the employer), the costs of the expenditures being met out of the income they receive as remuneration in kind. Thus, the values of the goods and services must be recorded as final consumption expenditure incurred by households as well as income in kind.

10.53 A distinction has to be made between goods or services provided to employees as remuneration in kind and goods or services provided because they are needed at work, the latter constituting intermediate consumption by the enterprise. In principle, the distinction is clear. Goods or services that employers are obliged to provide to their employees to enable them to carry out their work, such as tools, equipment, special clothing, etc., constitute intermediate consumption. On the other hand, goods or services that employees are able to use in their own time for the direct satisfaction of their needs or wants, or those of their families, constitute remuneration in kind. In practice, there are inevitably borderline cases, such as uniforms that must be worn at work but are also worn extensively by employees away from work. A detailed listing of the kinds of goods

and services that are included in remuneration in kind is given in the section on remuneration of employees in chapter 8 on Earned income accounts.

3. Expenditure on goods and services produced on own account

10.54 When institutional units retain goods or services produced by themselves for their own final consumption or gross fixed capital formation, they clearly bear the costs themselves. They are, therefore, recorded as incurring expenditures whose values have to be estimated using the basic prices of similar goods or services sold on the market or their costs of production in the absence of suitable basic prices.

10.55 Household final consumption expenditure includes estimates for the values of goods or services produced as outputs of unincorporated enterprises owned by households that are retained for final consumption by members of the household. The production of services for own consumption within the same household falls outside the production boundary of the integrated framework of the SNA, except for housing services produced by owner-occupiers and services produced by employing paid domestic staff. As the costs of producing goods or services for own final consumption are borne by the households themselves, it is clear that the expenditures on them are also incurred by households, even though their values must be estimated indirectly. The main types of goods and services produced and consumed within the same household are as follows:

a. Food or other agricultural goods produced for own final consumption by farmers, including subsistence farmers, or others for whom agricultural production is only a secondary, or even a leisure, activity;

b. Electricity through the use of solar panels and wind power plants and heat through the use of geothermal heat or heat pumps for own final consumption (or for delivery back to the grid);

c. Other kinds of goods produced by unincorporated enterprises owned by households that are consumed by members of the same households;

d. Housing services produced for own final consumption by owner-occupiers (discussed further below); and

e. Domestic or other services produced for own final consumption by households that employ paid staff for this purpose (domestic staff, cooks, gardeners, chauffeurs, etc.).

10.56 Values are estimated for these goods or services on the basis of the current basic prices of similar goods or services sold on the market, or by costs of production when suitable prices are not available, except for the services of paid staff; by convention, services of paid staff are valued simply by the remuneration of employees paid, in cash and in kind.

D. Household final consumption expenditure

1. Introduction

10.57 Household final consumption expenditure consists of expenditure incurred by resident households on consumption goods or services. As well as purchases of consumer goods and services, final consumption expenditure includes the estimated value of barter transactions, goods and services received in kind, and goods and services produced and consumed by the same household, valued as explained in section C.

10.58 Final consumption expenditure excludes expenditure on fixed assets in the form of dwellings or on valuables. Dwellings are goods used by their owners to produce housing services. Expenditure on dwellings by households, therefore, constitutes gross fixed capital formation. When dwellings are rented by their owners, rentals are recorded as output of housing services by owners and final consumption expenditure by tenants. When dwellings are occupied by their owners, the imputed value of the housing services enters into both the output and final consumption expenditure of the owners. Valuables are expensive durable goods that do not deteriorate over time, are not used up in consumption or production, and are acquired primarily as stores of value. They consist mainly of works of art, precious stones and metals and jewellery fashioned out of such

stones and metals. Valuables are held in the expectation that their prices, relative to those of other goods and services, will tend to increase over time, or at least not decline. Although the owners of valuables may derive satisfaction from possessing them, they are not used up in the way that consumption goods, including consumer durables, are used up over time.

10.59 The treatment of expenditure in some specific situations or on certain specific types of goods and services is outlined in the following sections.

2. Expenditures by households owning unincorporated enterprises

10.60 When a household includes one or more persons who own an unincorporated enterprise, all expenditure incurred for business purposes is excluded from household consumption expenditure. It is necessary to ensure that only expenditure for the direct satisfaction of human needs and wants is included in household final consumption expenditure. This may not be easy in practice when the same good or service (for example, electricity or other fuels) may be used equally well for business purposes or for final consumption. Business expenditures cannot therefore be identified purely on the basis of the type of good or service purchased. Particular care needs to be exercised in the case of farms, including subsistence farms, where goods that have been purchased, or produced on own account, may be used either for household final consumption or for intermediate consumption; for example, corn or potatoes may be consumed by members of the households, fed to animals or used as seeds for future crops.

10.61 Care is also needed with purchases of consumer durables such as vehicles, furniture, or electrical equipment, which are to be classified as gross fixed capital formation by the household enterprise when purchased for business purposes but as final consumption expenditure when purchased for the personal use of household members. While the nature of the distinction may be clear in principle, it is often blurred in practice, especially when the owner of the business uses a durable good, such as a vehicle, partly for business purposes and partly for personal benefit. This has become even more relevant in view of, for example, the provision of taxi services to third parties being more accessible through the digitalisation of the economy. In such cases, the expenditure on the purchase of the durable should be split between gross fixed capital formation by the enterprise and household final consumption expenditure in proportion to its usage for business and personal purposes at the time of purchase. If the change in the use of a durable relates to a product that has been purchased in the past, the change in use should be recorded as negative consumption expenditure and positive fixed capital formation, in proportion to the change in the use of the asset. When durables are purchased wholly or partly for business purposes, the decline in their value attributable to their use within the business should be recorded under the costs of depreciation of the unincorporated enterprise.

3. Expenditures on particular types of goods and services

Expenditures on financial services

10.62 When appropriate, values must be estimated for the expenditures that households incur on services provided by financial institutions for which no explicit charges are made. Expenditures on services for which financial institutions do make charges are recorded in the usual way.

Financial services, except insurance and pension fund services

10.63 Financial institutions, except insurance corporations and pension funds, and money lenders charge interest rates higher than a reference rate and pay interest at a rate lower than the reference interest rate. As explained in chapter 7 on Production account and chapter 8 on Earned income accounts, SNA interest is recorded in the allocation of earned income account at a reference rate and the difference between SNA interest and bank interest is recorded as either intermediate consumption (in the case of mortgage loans and business loans and deposits), or final consumption expenditure of households (in the case of other loans and deposits). (If it is not possible to identify interest payments and receipts relating to productive activities, all charges may be recorded as final consumption expenditure.)

10.64 When households acquire or dispose of foreign exchange and some other financial assets, the dealer in the financial asset will typically quote a buying price and a selling price for the asset. The difference between the price actually receivable or payable and the average of the buying and selling price at the time of the transaction is also treated as expenditure on the services of financial institutions.

Insurance and pension fund services

10.65 The way in which the value of the services produced by insurance corporations and pension schemes is calculated in the integrated framework of the SNA is explained in chapter 7 on Production account and chapter 24 on Insurance and pensions. The values of the insurance services consumed by different sectors, subsectors or institutional units are estimated by allocating the value of the services produced by an insurance corporation in proportion to the actual premiums. When the value of output is estimated by line of business, which is desirable if practicable, the service charge should be allocated across actual premiums by line of business also. The amounts paid by households are recorded as final consumption expenditure (except for the insurance services purchased by unincorporated enterprises owned by households, which are treated as intermediate consumption). The whole of the service charges on pension schemes is borne by households (some of which may be non-resident).

Services of dwellings, repairs and improvements

Services of owner-occupied dwellings

10.66 Persons who own the dwellings in which they live are treated as owning unincorporated enterprises that produce housing services that, disregarding possible rentals received from temporarily renting out the dwelling (see chapter 7 on Production account), are consumed by the household to which the owner belongs. The housing services produced are deemed to be equal in value to the rentals that would be paid on the market for accommodation of the same size, quality and type. Care must be taken in respect of any taxes paid on housing. Taxes such as value added tax are rarely paid on housing services, but if they are payable, they should be excluded from the value of owner-occupied housing services if the owner-occupier is exempt from payment. The imputed values of the housing services are recorded as final consumption expenditures of the owners.

Decoration, minor repairs and maintenance

10.67 "Do-it-yourself" activities of decoration and undertaking minor repairs, often of a routine nature, of a kind that would normally be seen as the responsibility of a tenant are treated as falling outside the production boundary applied in the integrated framework of national accounts. Purchases of materials used for such decoration or repairs should therefore be treated as final consumption expenditure, as should fees and service charges paid to builders, carpenters, plumbers, etc. Maintenance that is the responsibility of tenants is also treated as final consumption expenditure.

10.68 Expenditures that owners, including owner-occupiers, incur on the decoration, minor repairs and maintenance of the dwelling that would normally be seen as the responsibility of a landlord should not be treated as household final consumption expenditure but as intermediate expenditure incurred in the production of housing services. These expenditures may consist either of payments for services provided by professional builders or decorators or purchases of materials for "do-it-yourself" repairs and decoration. In the latter case, no cost of the labour involved in the activity is included. The value added for the production of owner-occupied housing services only consists of operating surplus.

Major improvements

10.69 Expenditures on major improvements (that is, reconstructions, renovations or enlargements) to dwellings are not classed in the same way as decoration, minor repairs and maintenance. They are excluded from household consumption expenditure and are treated as gross fixed capital formation on the part of the owners of those

dwellings, including owner-occupiers.

The repair and maintenance of consumer durables

10.70 Expenditures on all repair and maintenance of consumer durables, including vehicles, are treated in the same way as minor repairs to dwellings of the type carried out by tenants. Repairs and maintenance constitute final consumption expenditure whether they are carried out by specialist producers or by members of the household as "do-it-yourself" activities. In the latter case, only the values of the materials purchased should be included in household consumption expenditure.

Licences and fees

10.71 Households make payments to government units to obtain various kinds of licences, permits, certificates, passports, etc., and in some cases it is not clear whether the government units actually provide services in return, such as testing or inspection, or whether the payments are de facto taxes. As explained in paragraph 9.66 (c), mandatory payments by persons or households in order to obtain licences to own or use certain goods or to engage in the pursuit of certain activities should generally be recorded as taxes. Examples of payments which would normally be treated as current taxes are licences to own or use vehicles, boats or aircraft, driving or pilot's licences, firearm licences, licences for recreational hunting, shooting or fishing, visa fees, airport fees and court fees.

10.72 Non-fungible tokens are digital records hosted on a blockchain that are associated with a digital or physical asset or product but that are distinct from that asset or product. If such non-fungible tokens only grant personal use and display rights, the acquisition of these tokens should be recorded as final consumption expenditure. However, they may transform to a valuable at a later stage, similar to the purchases of, for example, objects of art, the purchases of which are initially recorded as final consumption expenditure. More information on the recording of transactions related to non-fungible tokens can be found in chapter 22 on Digitalisation.

4. Classification of household final consumption expenditure

10.73 Household final consumption expenditure is typically a large aggregate covering a wide range of goods and services. It is thus usually desirable to break down the figure. The *CPC* may be used for a breakdown by type of good or service. The *COICOP* may be used for a breakdown by purpose or function, such as food, health and education services.

5. Timing and valuation of household final consumption expenditure

Timing

10.74 In accordance with the general principles adopted in the integrated framework of the SNA, expenditures should be recorded when the payables are created, that is, when the purchaser incurs a liability to the seller. This implies that expenditure on a good is to be recorded at the time its ownership changes while expenditure on a service is recorded when the delivery of the service is completed. Non-monetary transactions are recorded when the goods involved are made available to the household.

10.75 When a good is acquired under a hire purchase agreement, financial lease or similar method of financing, the purchaser accepts the risks and rewards of ownership of the good from the time the good is delivered. A change of ownership is therefore imputed at the time of delivery. Even though there is no legal change of ownership at this point, it is assumed that there is a change of economic ownership. This change in economic ownership must also be shown in the financial accounts of the purchaser as incurring a liability to the hire purchase or finance corporation. If at the end of the lease period the leased asset is transferred back to the lessor, this should be recorded during the lease period as the building up of a financial claim (equal to the expected value of the asset at the end of the lease period), which is extinguished at the time of the transfer of the leased product. However, this may be difficult to apply in practice in which case it is considered

appropriate to record the transfer of the relevant product as a current or capital transfer.

Valuation

10.76 Household expenditure is recorded at the purchasers' prices paid by households including any taxes on products that may be payable at the time of purchase. As defined in paragraphs 7.72 to 7.76, the purchaser's price of a good is the amount payable to take delivery of a unit of the good at the time and place required by the purchaser. It includes any transport charges incurred by the purchaser not already included in the seller's invoice price.

10.77 The value of barter and goods received as income in kind is recorded at the prices paid by the units incurring the expenditure initially. Goods produced on own account are valued at basic prices, consistently with their valuation as production.

10.78 Different households may pay different prices for identical products because of market imperfections. Price differences may persist because households may not be aware of them, or they may have imperfect information because the costs of searching for the retail outlets selling at the lowest prices may be too great. Even when households are aware of the price differences, it may be too inconvenient or costly to visit the outlets selling at the lowest prices. Another reason for the persistence of price differences is that many service producers deliberately practise price discrimination by charging different households different prices for identical services (for example, by charging lower prices or fees to pensioners or people with low incomes). As services cannot be re-traded, price discrimination is extremely common, or even prevalent, among service producers. Household expenditures are nevertheless recorded at the prices actually paid, i.e., the exchange value, as this is the appropriate value of the transaction.

10.79 Apparent price differences between the same goods or services are often not genuine price differences as they may be due to differences in quality, including differences in the terms or conditions of sale. For example, lower prices are often charged for bulk purchases of goods or off-peak purchases of services. Such expenditures are recorded at the prices actually paid; that is, after deducting from the standard or list prices or charges any discounts for bulk or off-peak purchases.

Valuation of purchases on credit

10.80 The purchaser's price does not include any interest or service charges that may be added when the seller arranges for credit to be provided to the purchaser. Similarly, the purchaser's price does not include any extra charges that may be incurred as a result of failing to pay within the period stated at the time the purchases were made, such charges being effectively interest payments on the credit extended by the seller. If the credit is arranged by a financial institution, the total charge may need to be allocated between a financial service charge and interest, as explained in paragraph 10.63. If the credit is provided by a non-financial institution, no financial service charge is provided. Note, however, that many large retailers have subsidiaries handling credit facilities, which are classed as financial institutions in their own right.

6. Expenditures by resident and non-resident households

10.81 Resident households make expenditures while travelling abroad, and non-resident households may make expenditures inside the economic territory of a country. Household final consumption expenditure in the integrated framework of the SNA refers to the expenditure incurred by resident households, whether that expenditure is incurred within the economic territory or abroad.

10.82 In order to calculate total household final consumption expenditure it may be convenient to calculate the total expenditure made by all households, whether resident or not, within the economic territory and to adjust this figure by adding expenditures by residents abroad and subtracting expenditures by non-residents within the economy territory. Expenditures by residents abroad constitute imports, while expenditures by non-residents are exports. However, while the total expenditures by all households within the economic territory may be used for calculation in this way, it is not an aggregate recognized within the integrated framework of the

SNA.

E. Household actual final consumption

10.83 Household actual final consumption consists of the consumption goods and services acquired by individual households. The value of household actual final consumption is given by the sum of three components:

a. The value of households' expenditures on consumption goods or services including expenditures on non-market goods or services sold at prices that are not economically significant;

b. The value of the expenditures incurred by government units on individual consumption goods or services provided to households as social transfers in kind; and

c. The value of the expenditures incurred by NPISHs on individual consumption goods or services provided to households as social transfers in kind.

10.84 The values of social transfers in kind provided by government units or NPISHs are equal to the values of the goods or services supplied to households less the amounts of any expenditures incurred by households when the prices charged are not economically significant.

10.85 As described in sections F and I, the consumption expenditure on individual goods and services by both general government and NPISHs is broken down between those that are produced by the units themselves as non-market producers and those that are purchased from market producers for onward transmission to households free or at prices that are not economically significant. This means that total household actual final consumption can also be split into these two components.

F. Consumption expenditures incurred by general government

10.86 Expenditures on a wide range of consumption goods and services are incurred by general government, either on collective services or on selected individual goods or services.

10.87 The final consumption expenditures of general government can be classified in several ways. In particular, they may be classified:

a. According to whether the goods or services have been produced by market or non-market producers;

b. According to whether the expenditures are on collective services or individual goods or services;

c. By function or purpose according to the *COFOG*; or

d. By type of good or service according to the *CPC*.

1. Expenditures on the outputs of market and non-market producers

10.88 Expenditures on the outputs of non-market producers that are provided free, or at prices that are not economically significant, to individual households or the community account for most of the final consumption expenditure by general government. It is therefore appropriate to take them first.

Expenditures on the outputs of non-market producers

10.89 Government may produce output for own final use and some market output but most production by units of general government is non-market in nature. As explained in chapter 7 on Production account, the value of the non-market output is estimated by the sum of the costs involved in production. Although government delivers goods and services to the population individually and collectively, the costs of so doing are shown as final consumption expenditure by government.

10.90 The value of government final consumption expenditure on non-market goods and services is not necessarily exactly equal to the value of government output of these goods and services. The values of these expenditures

are equal to the estimated values of all types of output less the value of production for own capital formation and less the values of any receipts from sales. These receipts may be derived from sales of some goods or services at prices that are not economically significant or from sales of a few goods or services at prices that are economically significant (sales of secondary market output).

Expenditures on consumption goods and services produced by market producers

10.91 Government units also purchase consumption goods and services produced by market producers that are supplied directly to households. The role of the government unit is confined to paying for the goods or services and ensuring that they are distributed to households as social transfers in kind. The government unit does not engage in any further processing of such goods or services and the expenditures are treated as final consumption expenditure and not intermediate consumption of the government unit. The values of the goods or services distributed in this way form part of social transfers in kind. In this way, expenditure by government on market goods and services on behalf of households is recorded as both final consumption expenditure of government and actual final consumption of households.

Government output and final consumption expenditure

10.92 Final consumption expenditure of government can be derived as follows:

The value of all types of output of general government

minus the value of output for own account capital formation

minus the value of sales of goods and services at both economically insignificant prices and at economically significant prices

plus the value of goods and services purchased from market producers for delivery to households free or at economically insignificant prices.

2. Expenditures on individual and collective goods and services

10.93 The consumption expenditures incurred by government units have to be divided into those incurred for the benefit of individual households and those incurred for the benefit of the community as a whole, or large sections of the community.

Individual goods and services

10.94 Individual goods and services are essentially “private”, as distinct from “public”, goods and services. They have the following characteristics:

a. It must be possible to observe and record the acquisition of the good or service by an individual household or member thereof and also the time at which it took place;

b. The household must have agreed to accept the provision of the good or service and to take whatever action is necessary to make it possible, for example, by attending a school or clinic; and

c. The good or service must be such that its acquisition by one household or person, or possibly by a small, restricted group of persons, precludes its acquisition by other households or persons.

10.95 The reference to a small restricted group of persons is needed because certain services are provided to small groups of people simultaneously; for example, several persons may travel in the same bus, train, ship or plane or attend the same class, lecture, concert or live theatre performance. However, these are still essentially individual services if there is a restriction on the number of individuals who can consume them. Other members of the community are excluded and derive no benefit from them.

10.96 From a material well-being point of view, the important characteristic of an individual good or service is that

its acquisition by one household, person or group of persons brings no (or very little) benefit to the rest of the community. While the provision of certain individual health or education services (for example, vaccination or immunization) may bring some external benefits to the rest of the community, in general the individuals concerned derive the main benefit. Thus, when a government unit incurs expenditures on the provision of individual goods or services, it must decide not only how much to spend in total but also how to allocate, or distribute, the goods or services among individual members of the community. From the point of view of economic and social policy, the way in which they are distributed may be as important as the total amount spent.

Individual consumption by type of producer

10.97 The whole of individual consumption of general government is treated as social transfers in kind in the social transfers in kind account and in the use of disposable income adjusted for social transfers in kind account. It is analytically interesting to split individual consumption into those goods and services produced by general government as a non-market producer and those that are purchased by general government from market producers for onward transmission to households either free or at prices that are not economically significant.

Collective services

10.98 Most goods can be privately owned and are individual in the sense used here. On the other hand, certain kinds of services can be provided collectively to the community as a whole. The characteristics of these collective services may be summarized as follows:

a. Collective services are delivered simultaneously to every member of the community or to particular sections of the community, such as those in a particular region of a locality;

b. The use of such services is usually passive and does not require the explicit agreement or active participation of all the individuals concerned; and

c. The provision of a collective service to one individual does not reduce the amount available to others in the same community or section of the community. There is no rivalry in acquisition.

10.99 The collective services provided by government consist mostly of the provision of services such as security and defence, the maintenance of law and order, legislation and regulation, the provision of public infrastructure for transport, the protection of the environment, etc. All members of the community can benefit from such services. As the individual usage of collective services cannot be recorded, individuals cannot be charged according to their usage.

The borderline between individual and collective services

10.100 Expenditures incurred by governments in connection with individual services such as health and education are to be treated as collective when they are concerned with the formulation and administration of government policy, the setting and enforcement of public standards, the regulation, licensing or supervision of producers, etc. For example, the expenditures incurred by Ministries of Health or Education at a national level are to be included in collective consumption expenditures as they are concerned with general matters of policy, standards and regulation. On the other hand, any overhead expenses connected with the administration or functioning of a group of hospitals, schools, colleges or similar institutions are to be included in individual expenditures. For example, if a group of private hospitals has a central unit that provides certain common services such as purchasing, laboratories, ambulances, or other facilities, the costs of these common services would be taken into account in the prices charged to patients. The same principle must be followed when the hospitals are non-market producers: all the costs that are associated with the provision of services to particular individuals, including those of any central units providing common services, should be included in the value of expenditures on individual services.

The classification of individual and collective government expenditures

10.101 The *COFOG* is a classification of transactions designed to apply to general government and its subsectors. There are ten classes in the classification as follows:

01 General public services;

02 Defence;

03 Public order and safety;

04 Economic affairs;

05 Environmental protection;

06 Housing and community amenities;

07 Health;

08 Recreation, culture and religion;

09 Education;

10 Social protection.

10.102 Following the conceptual principles, all of classes 01 to 06 are collective services, as are section 07.5 and 07.6 of health, sections 08.3 to 08.6 of recreation, culture and religion, sections 09.7 and 09.8 of education, and sections 10.8 and 10.9 of social protection. These sections cover expenditures on general administration, regulation, research that is not recorded as capital formation and so on. The remaining sections of health, recreation, culture and religion, education and social protection (which dominate each of the classes) are individual services. However, the *COFOG* classification is periodically reviewed and the precise mapping of the *COFOG* classification to collective and individual services may also be updated during these revisions.

Non-market services to enterprises

10.103 Many government expenditures benefit enterprises as much as households; expenditures on the cleaning, maintenance and repair of public roads, bridges, tunnels, etc., including the provision of street lighting, are examples. These are services whose consumption can be monitored and for this reason they are frequently provided on a market basis by charging tolls on road usage. When they are provided free, however, it would be difficult to separate the services provided free to enterprises from those provided free to households and, by convention, all these expenditures are treated as collective final expenditure.

10.104 Collective services such as the provision of security by the police, fire services, etc. that are provided free to the community at large also benefit individual enterprises as well as households.

G. Actual final consumption of general government

10.105 The value of the actual final consumption of general government is equal to the value of its total final consumption expenditure less its expenditure on individual goods or services provided as social transfers in kind to households. The value of the actual final consumption of government units is thus equal to the value of the expenditures they incur on collective services. Although collective services benefit the community, or certain sections of the community, rather than the government, the actual consumption of these services cannot be distributed among individual households, or even among groups of households such as subsectors of the household sector, or to enterprises, as just noted. It is therefore attributed to the government units that incur the corresponding expenditures.

10.106 The identification and measurement of government actual final consumption serves two main analytical or policy purposes:

a. Collective services can be identified with “public goods” as defined in public finance and economic theory. While it may be technically possible to charge individual consumers of certain collective

services according to their usage, the transactions costs of so doing would be prohibitively high. This provides an economic, rather than political, rationale for government involvement;

b. Collective services do not provide a mechanism for redistributing resources among individual households. As redistribution may be one of the main economic objectives of government policy, it is useful to separate the collective services that do not serve this purpose from the individual goods and services that are ultimately channelled to individual households, even though paid for by government.

H. Consumption expenditure and actual consumption of the central bank

10.107 The central bank is the financial institution (or institutions) that exercises control over key aspects of the financial system. Their principal functions generally include conducting monetary policy, including by issuing currency and regulating money supply and credit; managing international reserves and the payments system; promoting financial stability, including regulation and macroprudential supervision; and acting as banker to government.

10.108 The central bank may produce output for own final use and, as a secondary activity, some market output, but most production by the central bank is non-market in nature. As explained in chapter 7 on Production account, the value of the non-market output is estimated by the sum of the costs involved in production. As the central bank delivers their services to the population collectively, the costs of doing so are shown as final consumption expenditure of the central bank, similar to the treatment of collective services provided by general government as final consumption expenditure of general government.

10.109 The value of central bank final consumption expenditure on non-market services is not necessarily equal to the value of central bank output of these services. The values of these final consumption expenditures are equal to the estimated values of all types of output less the value of production for own capital formation and less the values of any receipts from sales. These receipts may be derived from sales of some goods or services at prices that are not economically significant or from sales of a few goods or services at prices that are economically significant (sales of secondary market output). In some cases, the central bank may charge fees to financial corporations related to, for example, supervisory services. If such fees are compulsory in nature, they are not treated as payments for services, but as current transfers.

10.110 All consumption expenditures incurred by the central bank are treated as collective services. Actual consumption of the central bank is therefore equal to the consumption expenditure incurred by the central bank. No individual services, and thus no social transfers in kind, are provided to households.

I. Consumption expenditures incurred by NPISHs

10.111 The treatment of consumption expenditures incurred by NPISHs is very similar to that for general government. This section itemizes only those aspects that differ. Whereas government expenditures are financed in large part out of taxation, those of NPISHs are financed principally out of subscriptions, contributions, donations or property income.

10.112 The services provided by NPISHs are often confined to the members of the associations that own them, although they may also provide individual goods or services to third parties. Many NPISHs are only concerned with protecting the interests or (material) well-being of their members or providing recreational, sporting or cultural facilities that households or persons cannot otherwise easily obtain for themselves acting individually. Although NPISHs may provide services to their members in groups, the services are essentially individual rather than collective. In general, persons other than their members are excluded and derive no benefit from the services provided.

10.113 It is possible for NPISHs to produce collective services. For example a privately funded non-profit institution may undertake medical research and make its results freely available. However, unless such activities are evident and quantifiable, the assumption can be made that the expenditure of NPISHs is on individual goods and services only.

10.114 The final consumption expenditures of NPISHs can be classified in several ways. In particular, they may be classified:

a. According to whether the goods or services have been produced by market or non-market producers;

b. According to whether the expenditures are on collective services or individual goods and services;

c. By function or purpose according to the classification of the purposes of non-profit institutions serving households (*COPNI*); and

d. By type of good or service according to the *CPC*.

10.115 For NPISHs as for government, it is possible that they purchase goods from market producers for distribution to households. It is also possible that they may have some receipts from sales either of non-market output at prices that are not economically significant or from sales of secondary market production at economically significant prices. However for many NPISHs, the value of their consumption expenditure will exactly match the value of their non-market output.

Individual consumption by type of producer

10.116 The whole of individual consumption of NPISHs is treated as social transfers in kind in the social transfers in kind account and in the use of disposable income adjusted for social transfers in kind account. It is analytically interesting to split individual consumption into those goods and services produced by NPISHs as non-market producers and those that are purchased by NPISHs from market producers for onward transmission to households either free or at prices that are not economically significant.

J. Actual final consumption of NPISHs

10.117 The value of the actual final consumption of NPISHs is equal to the value of its total final consumption expenditure less its expenditure on individual goods or services provided as social transfers in kind to households. The value of the actual final consumption of NPISHs is thus equal to the value of the expenditures they incur on collective services. If it is not possible to identify and measure collective services provided by NPISHs, there may be no actual final consumption of NPISHs shown in the accounts.

K. Final consumption expenditure and actual final consumption: summary

10.118 The purpose of this section is to summarize the conceptual interrelationship between the main consumption aggregates for the four sectors in which final consumption takes place, namely, the household sector, the NPISH sector, the general government sector, and the financial corporations' sector (i.e., the central bank).

1. Final consumption expenditure

10.119 Household final consumption expenditure consists of the expenditure, including expenditure whose value must be estimated indirectly, incurred by resident households on individual consumption goods and services, including those sold at prices that are not economically significant and including consumption goods and services acquired abroad.

10.120 General government final consumption expenditure consists of expenditure, including expenditure whose value must be estimated indirectly, incurred by general government on both individual consumption goods and services and collective consumption services.

10.121 Final consumption expenditure of NPISHs consists of the expenditure, including expenditure whose value must be estimated indirectly, incurred by resident NPISHs on individual consumption goods and services and possibly on collective consumption services.

10.122 Final consumption expenditure of the central bank consists of expenditure, including expenditure whose

value must be estimated indirectly, incurred by the central bank on collective consumption services.

2. Actual final consumption

10.123 Actual final consumption of households is measured by the value of all the individual consumption goods and services acquired by resident households. There are three sets of goods and services entering into household actual final consumption:

a. Those acquired through expenditure by households themselves;

b. Those acquired as social transfers in kind from general government and NPISHs that are the output of these institutions as non-market producers;

c. Those acquired as social transfers in kind from general government and NPISHs that have been purchased by these institutions from market producers for onward transmission to households free or at prices that are not economically significant.

10.124 Actual final consumption of general government is measured by the value of the collective consumption services provided to the community, or large sections of the community, by general government.

10.125 Actual final consumption of NPISHs is measured by the value of the collective consumption services provided to the community, or large sections of the community, by NPISHs.

10.126 Actual final consumption of the central bank is measured by the value of the collective consumption services provided to the community, or large sections of the community, by the central bank.

3. Total final consumption in the economy

10.127 Total final consumption in the economy may be viewed from two angles. It may be defined from the expenditure side as the total value of all expenditures on individual and collective consumption goods and services incurred by resident households, resident NPISHs, general government units, and the central bank. Or, it may be defined in terms of actual final consumption as the value of all the individual goods and services acquired by resident households plus the value of the collective services provided by general government, the central bank and NPISHs to the community or large sections of the community.

10.128 As noted in paragraph 9.153, social transfers in kind may be paid to non-residents. One simple example is emergency medical care provided to a foreign tourist by a hospital within general government. However, just as non-resident households may benefit from social transfers in kind from the national government, so resident households may benefit from social transfers in kind paid by the government of another economy. In general these flows to non-residents will be small relative to the total level of social transfers in kind and, unless there is strong evidence to the contrary, by convention it may be assumed that the flows to non-residents are balanced by flows from governments (and NPISHs) of other economies. Subject to this convention, it is therefore the case that consumption expenditure for the total economy is exactly equal to total actual consumption.

10.129 In order to ensure that the values of the two aggregates are the same, the goods and services acquired by resident households through social transfers in kind must always be valued at the same prices at which they are valued in the expenditure aggregates and the time of recording the goods and services acquired by social transfers in kind must be the same as the time of recording in the expenditure aggregates.

Chapter 11: Capital account

A. Introduction

11.1 The capital account is the first of four accounts dealing with changes in the values of assets held by institutional units. It records transactions in non-financial assets. The financial account records transactions in financial assets and liabilities. The other changes in the volume of assets and liabilities account records changes in the value of both non-financial and financial assets that result from neither transactions nor price changes. The effects of price changes are recorded in the revaluation account. These four accounts enable the change in the net worth of an institutional unit or sector between the beginning and the end of the accounting period to be decomposed into its constituent elements by recording all changes in the prices and volumes of assets, whether resulting from transactions or not. The impact of all four accounts is brought together in the balance sheets. The immediately following chapters describe the other accounts just mentioned.

11.2 The purpose of the capital account, shown in table 11.1, is to record the values of the non-financial assets that are acquired, or disposed of, by resident institutional units by engaging in transactions and to show the change in net worth due to saving and capital transfers. The transactions may be either with other institutional units, both resident and non-resident, or internal transactions in which units retain products that they have produced themselves for use as capital formation.

11.3 When compiling balance sheets, it is customary to record assets on the left-hand side and liabilities and net worth on the right-hand side. The same convention is followed in the accumulation accounts, where changes in assets are recorded on the left-hand side and changes in the other items on the right-hand side. As in the current accounts, the balancing item of the capital account, net lending or net borrowing, is recorded on the left-hand side. Depreciation and depletion are also recorded on the left-hand side of the capital account.

11.4 The right-hand side of the capital account records the revenues available for the accumulation of assets. These consist of net saving, the balancing item carried forward from the use of income account, and capital transfers. Capital transfers payable are recorded with a negative sign.

1. The definitions of ownership and assets

11.5 Ownership and assets are defined in chapter 4 but it is helpful to recall some of the key features of the definitions here. It is important to distinguish between legal ownership and economic ownership. ***The legal owner is the institutional unit entitled in law and sustainable under the law to claim the economic benefits associated with the goods, services, natural resources, financial assets or liabilities (which may be different from the economic owner). By contrast, the economic owner is the institutional unit that is entitled to claim the economic benefits associated with the use of goods, services, natural resources, and financial assets in the course of an economic activity, and that is accepting the associated risks.***

11.6 Every item has both a legal owner and an economic owner, though in many cases the economic owner and the legal owner of an item are the same. Where they are not, the legal owner has handed responsibility for the risk involved in using the item in an economic activity to the economic owner along with associated economic benefits. In return the legal owner accepts another package of risks and economic benefits from the economic owner.

11.7 When government claims legal ownership of an item on behalf of the community at large, the economic benefits also accrue to the government on behalf of the community at large. Thus government is regarded as both the legal and economic owner of these items.

11.8 Especially in relation to natural resources, a government is typically the legal owner and grants rights or permissions to use the resources to another institutional unit. In such cases, the economic benefits may be shared between the government and the user of the resources, and the economic ownership of the resources is split between the two institutional units involved, in line with the shares of natural resource rent each unit appropriates. (See chapter 27 for more details.)

11.9 In the case of multinational enterprise (MNE) groups, the economic ownership of intellectual property

products may be difficult to determine. Various arrangements, including the routing via special purpose entities, exist. The use of a decision tree is recommended for the appropriate allocation and recording of these assets across the MNE group. See chapter 23 for more information.

11.10 ***An asset is a store of value representing an economic benefit or series of economic benefits accruing to the economic owner by holding or using the item over a period of time. It is a means of carrying forward value from one accounting period to another***. All assets in the integrated framework of national accounts are economic assets.

Table 11.1: The capital account - concise form - changes in assets

Changes in assets

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
NF1	Acquisitions less disposals of produced non-financial assets (excluding natural resources)	141	- 4	11	30	2	180			180
NF11	Gross fixed capital formation	257	8	35	44	5	349			349
NF12	Depreciation (-)	- 142	- 12	- 27	- 20	- 3	- 204			- 204
NF13	Changes in inventories	24	0	0	1	0	25			25
NF14	Acquisitions less disposals of valuables	2	0	3	5	0	10			10
NF2	Acquisitions less disposals of non-produced non-financial assets (excluding natural resources)	- 1	0	0	1	0	0	0		0
NF3	Acquisitions less disposals of natural resources	- 8	0	- 16	5	1	- 18			- 18
NF31	Gross fixed capital formation	23	0	0	4	0	27			27
NF32	Depreciation (-)	- 15	0	0	- 3	0	- 18			- 18
NF33	Changes in inventories	2	0	0	1	0	3			3
NF34	Acquisitions less disposals of non-produced natural resources	- 6	0	2	3	1	0			0
NF35	Depletion (-)	- 12		- 18	0		- 30			- 30
D9r	Capital transfers, receivable									
D9p	Capital transfers, payable									
B9	*Net lending (+) / net borrowing (–)*	- 80	- 3	- 77	174	- 4	10	- 10		0

Table 11.1 (cont): The capital account - concise form - changes in liabilities and net worth

Changes in liabilities and net worth

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
B8n	*Saving, net*	35	0	- 54	192	2	175			175
B12	*Current external balance*							- 13		- 13
NF1	Acquisitions less disposals of produced non-financial assets (excluding natural resources)									
NF11	Gross fixed capital formation								349	349
NF12	Depreciation (-)									
NF13	Changes in inventories								25	25
NF14	Acquisitions less disposals of valuables								10	10
NF2	Acquisitions less disposals of non-produced non-financial assets (excluding natural resources)									
NF3	Acquisitions less disposals of natural resources									
NF31	Gross fixed capital formation								27	27
NF32	Depreciation (-)									
NF33	Changes in inventories								3	3
NF34	Acquisitions less disposals of non-produced natural resources									
NF35	Depletion (-)									
D9r	Capital transfers, receivable	33	0	6	23	0	62	4		66
D9p	Capital transfers, payable	- 16	- 7	- 34	- 5	- 3	- 65	- 1		- 66
B101	Changes in net worth due to saving and capital transfers	52	- 7	- 82	210	- 1	172	- 10		162

2. Non-financial assets

11.11 Three different categories of non-financial assets are distinguished from each other: produced non-financial assets (excluding produced natural resources), non-produced non-financial assets (excluding non-produced natural resources), and natural resources.

a. Produced non-financial assets (excluding produced natural resources) (AN1) are non-financial assets that have come into existence as outputs from production processes that fall within the production boundary of the integrated framework of national accounts, excluding produced natural resources. They consist of fixed assets, inventories and valuables.

b. Non-produced non-financial assets (excluding non-produced natural resources) (AN2) are non-financial assets that have come into existence in ways other than through processes of production, excluding non-produced natural resources. They consist of contracts, leases and licences; crypto-assets without a corresponding liability, purchased goodwill and marketing assets.

c. ***Natural resources (AN3) are assets that naturally occur, such as land, mineral and energy resources, water resources, and animal, tree, crop and plant resources, that have an economic value and over which ownership may be enforced and transferred. Environmental assets over which ownership rights have not, or cannot, be enforced, such as high seas beyond national jurisdiction and most parts of the atmosphere, are excluded.*** A significant part of natural resources is non-produced, although biological resources are frequently the result of human involvement, and

have thus come into existence as outputs from production processes.

Produced assets (excluding produced natural resources)

11.12 There are three main types of produced assets: fixed assets, inventories and valuables. Both fixed assets and inventories are assets that are held only by producers for purposes of production. Valuables may be held by any institutional unit and are primarily held as stores of value.

11.13 ***Fixed assets are produced assets that are used repeatedly or continuously in production processes for more than one year.*** The distinguishing feature of a fixed asset is not that it is durable in some physical sense, but that it may be used repeatedly or continuously in production over a long period of time, which is taken to be more than one year. Some goods, such as coal, may be highly durable physically but cannot be fixed assets because they can be used once only. Fixed assets include not only structures, machinery and equipment but also various intellectual property products used in production, such as software, data and databases or artistic originals. Cultivated, i.e., produced, assets such as trees or animals that are used repeatedly or continuously to produce other products such as fruit or dairy products are excluded here, and instead included in (produced) natural resources.

11.14 ***Inventories are produced assets that consist of goods and services which came into existence in the current period or in an earlier period, and that are held for sale, use in production or other use at a later date***. Inventories consist of stocks of outputs that are still held by the units that produced them prior to their being further processed, sold, delivered to other units or used in other ways and stocks of products acquired from other units that are intended to be used for intermediate consumption or for resale without further processing. Inventories of services consist of work-in-progress or finished products, for example architectural drawings, which are in the process of completion or are completed and waiting for the building to which they relate to be started. Inventories held by government include, but are not limited to, inventories of strategic materials, and grain and other commodities of special importance to the nation. Work-in-progress related to cultivated biological resources, such as the growth of single-use plants, trees and livestock that produce an output once only, is excluded, and instead included in (produced) natural resources. The same holds for biological resources yielding repeat products which have not yet matured.

11.15 ***Valuables (AN13) are products of considerable value that are not used primarily for purposes of production or consumption but are held as stores of value over time. Examples are precious metals and stones, antiques, paintings, sculptures or other art objects.*** Valuables are expected to appreciate or at least not to decline in real value, nor to deteriorate over time under normal conditions. Valuables may be held by all sectors of the economy.

Non-produced assets (excluding non-produced natural resources)

11.16 Non-produced assets (excluding non-produced natural resources) consist of three categories: contracts, leases and licences; crypto assets without a corresponding liability designed to act as a medium of exchange; and purchased goodwill and marketing assets.

11.17 ***Contracts, leases and licences (AN21) are non-produced assets where one party to a contract, lease or license is able legally and practically to realize the price difference between the market price for the use of an asset or the provision of a service, and the price specified in the contract, lease or license. Non-fungible tokens that grant limited ownership rights are also included.*** These items are treated as assets only when two conditions are both satisfied.

a. The terms of the contract, lease or licence specify a price for the use of an asset or provision of a service that differs from the price that would prevail in the absence of the contract, lease or licence.

b. One party to the contract must be able legally and practically to realize this price difference.

The second condition presupposes that a market for the contract exists. It is recommended that in practice contracts, leases and licences should only be recorded in the sequence of economic accounts when the holder does actually exercise his right to realize the price difference.

11.18 Contracts, leases and licenses may also include non-fungible tokens that grant limited ownership rights to another asset or product from which the owner of the NFT can derive economic benefits (e.g., some form of royalties).

11.19 ***Crypto assets without a corresponding liability designed to act as a medium of exchange relate to crypto assets (AN22) for which there is no claim on the issuer. They may be designed to act as a general medium of exchange, or designed to act as medium of exchange within a platform only.***

11.20 Purchased goodwill and marketing assets (AN23) represent the whole or part of the net worth of an institutional unit. ***Purchased goodwill is the difference between the value paid for an enterprise as a going concern and the sum of its assets less the sum of its non-equity liabilities, where each item has been separately identified and valued. Marketing assets consist of items such as brand names, mastheads, trademarks, logos and domain names.*** Purchased goodwill and marketing assets are recorded only when a unit is purchased in its entirety or an identifiable marketing asset is sold to another unit.

Natural resources

11.21 Natural resources can be broken down into the following categories: land; mineral and energy resources, both non-renewable and renewable resources; biological resources; water resources; and a residual category containing, for example, radio spectra. As noted before, natural resources include both produced and non-produced assets.

11.22 ***Environmental assets, as defined in the SEEA, refer to a broader concept and are defined as "naturally occurring living and non-living components of the Earth, together constituting the biophysical environment, which may provide benefits to humanity". In macroeconomic statistics, environmental assets are only recognised in as far they meet the asset boundary applied in the integrated framework of the SNA, by providing economic benefits to their owners, either individually or collectively.*** Assets over which ownership rights have not, or cannot, be enforced, such as high seas beyond national jurisdiction and most parts of the atmosphere, are excluded, unless exclusive rights on the resources are established, for example in the form of quota regimes for capturing fish. Also ecosystem assets are generally not recognised in the integrated framework of the SNA; see paragraphs 11.178 to 11.182.

3. The structure of the capital account

Saving

11.23 The right-hand side of the capital account represents changes in liabilities and net worth. The first item recorded on the right-hand side is the balancing item carried down from the use of disposable income account, net saving. When positive, net saving represents that part of disposable income that is not spent on consumption goods and services and must, therefore, be used to acquire non-financial or financial assets of one kind or another, including cash, or to repay liabilities. When negative, net saving measures the amount by which final consumption expenditure exceeds disposable income; the excess must be financed by disposing of assets or incurring new liabilities.

Capital transfers

11.24 ***Capital transfers (D9) are unrequited transfers, either in cash or in kind, linked to the acquisition, disposal or transfer of an asset (other than cash or inventories); or where a liability is forgiven or assumed; or where the transfers are intended to address accumulated losses incurred over a multi-year period.*** Capital transfers are often large and irregular but neither of these are necessary conditions for a transfer to be considered a capital rather than a current transfer. If there is doubt about whether a transfer should be treated as current or capital, it should be treated as current.

11.25 Capital transfers receivable represent an increase in net worth and so are shown on the right-hand side of the account for the recipient. By convention, the matching amounts payable are also shown on the right-hand side of the account but as a negative entry (that is, a decrease in net worth) for the payer.

Changes in net worth due to saving and capital transfers

11.26 The total of the entries on the right-hand side of the account is explicitly shown and described as changes in net worth due to saving and capital transfers. It is not a balancing item. ***Changes in net worth due to saving and capital transfers (B101) represent the balance of changes in the value of stocks and positions on the balance sheet, due to savings and capital transfers. It also reflects the positive or negative amount available to the unit or sector for the acquisition of non-financial and financial assets.***

Acquisitions less disposals of non-financial assets

11.27 The left-hand side of the capital account records how much of the change in net worth due to saving and capital transfers is used to acquire non-financial assets and how much is left to be explained by the acquisition of financial assets or liabilities in the financial account. Revenues coming from the disposal of existing assets appear as negative entries on the left-hand side of the account also. As well as purchases and sales of assets, non-financial assets acquired (or disposed of) via barter or by means of production for own use are included.

11.28 The following headings for the net change in the value of non-financial assets are shown in the capital account:

a. Acquisitions less disposals of produced non-financial assets (excluding natural resources), broken down by:

- Gross fixed capital formation
- Depreciation
- Changes in inventories
- Acquisitions less disposals of valuables

b. Acquisitions less disposals of non-produced non-financial assets (excluding natural resources)

c. Acquisitions less disposals of natural resources, broken down by:

- Gross fixed capital formation
- Depreciation
- Changes in inventories
- Acquisitions less disposals of non-produced natural resources
- Depletion

Gross fixed capital formation, depreciation and changes in inventories under item c are relevant for produced natural resources, while acquisition less disposals of non-produced non-financial assets and depletion are relevant for non-produced natural resources.

The treatment given to each of the categories of changes in assets listed in the above is described in later sections of this chapter.

11.29 The sum of acquisitions less disposals of produced assets, including produced natural resources, for purposes of fixed capital formation, inventories or valuables is referred to as gross capital formation. It is possible (if uncommon) for the gross capital formation of an individual institutional unit or sector to be negative if it sells off enough of its existing assets to other units or sectors.

11.30 ***Depreciation (NF12 + NF32) is the decline, during the course of the accounting period, in the current value of the stock of fixed assets, including produced natural resources, owned and used by a producer as a result of physical deterioration, normal obsolescence or normal accidental damage.*** Section E provides more details on depreciation.

11.31 ***Depletion (NF35), in physical terms, represents the decrease in the quantity of the stock of a non-produced natural resource over an accounting period that is due to the extraction of the natural resource by economic units occurring at a level greater than that of its growth; in monetary terms, it corresponds with***

the decline in future economic benefits, due to extraction in excess of its growth, that can be earned from a resource, the value of which is based on the physical flows of depletion using the price of the natural resource in situ. Section E provides more details on depletion.

11.32 When, as recommended in the SNA sequence of economic accounts, the balancing item carried down from the use of income account is net saving, it already reflects the fact that net worth has been reduced by the amount of depreciation and depletion, the amount by which the relevant assets are reduced in the period. Since the capital account is designed to show the way in which net worth is augmented by the acquisition of non-financial assets, depreciation has to be offset from the value of new acquisitions of fixed assets so the addition to the capital stock of fixed assets is a net amount. For this reason, depreciation is recorded as a negative change in assets on the left-hand side of the capital account. Depletion is also shown as a negative change in assets, but in the case of non-produced natural resources, the relevant assets typically come into existence via newly exploited resources, which are recorded as other changes in the volume of assets.

11.33 One of the items on the left-hand side of the capital account refers to the acquisitions less disposals of non-produced non-financial assets (excluding natural resources). The total value of the acquisitions less disposals of these assets may be positive or negative, as there may be transactions in contracts, leases and licences, crypto assets without a corresponding liability designed to act as a medium of exchange, or marketing assets with non-resident units.

11.34 The last item on the left-hand side of the capital account refers to acquisitions less disposals of natural resources. This item combines the acquisitions less disposals of both produced and non-produced natural resources. Since non-produced natural resources are owned by units that are either actually or notionally resident, this part will generally be zero for the economy as a whole. (An exception exists for land purchased by a foreign government for an embassy or military base.)

Net lending

11.35 The balancing item of the capital account, ***net lending (B9), is defined as the difference between changes in net worth due to saving and capital transfers and net acquisitions of non-financial assets (acquisitions less disposals of non-financial assets, less depreciation and depletion). If the amount is negative it represents net borrowing.*** It shows the amount of the revenues remaining for purposes of lending or that need to be borrowed. Even if funds are not actively lent but are retained in cash, or in a bank deposit, the holder of the counterpart obligations represented by these financial assets has in effect borrowed from the unit holding the cash or bank deposit.

11.36 The identity between the balancing items of the capital account and the financial account is an important feature of the set of the accounts as a whole. What is borrowed by one unit must be lent by another and vice versa. The conceptual identity between the balancing items provides a check on the numerical consistency of the set of accounts as a whole, although the two balancing items are likely to diverge in practice because of errors of measurement.

11.37 In general in the integrated framework of the SNA, and especially in balancing items, the prefix net means excluding depreciation and depletion. For net lending this is not the case; it represents the difference between those assets giving rise to making funds available to other units and those drawing funds from other units.

B. Acquisitions less disposals of produced non-financial assets (excluding natural resources)

11.38 Acquisitions less disposals of produced non-financial assets (excluding natural resources) are measured by the total value of the gross fixed capital formation (excluding natural resources), changes in inventories (excluding natural resources) and acquisitions less disposals of valuables. Before discussing in detail the entries to be recorded under each of these items, it is necessary to clarify the coverage of the item and the application of accounting rules such as valuation, time of recording and the identification of ownership. This section focuses on gross capital formation excluding capital formation related to natural resources. The latter is discussed in section D.

1. Gross fixed capital formation (excluding natural resources)

11.39 Gross fixed capital formation (excluding natural resources) is measured by the total value of a producer's acquisitions, less disposals, of fixed assets during the accounting period plus certain specified expenditure on services that adds to the value of non-produced assets. In order to ensure that the coverage of gross fixed capital formation is precisely defined, it is necessary first to define what does and what does not constitute a fixed asset and what activities are treated as adding to the value of non-produced assets.

The asset boundary

11.40 All goods and services supplied to the economy by means of production, imports or the disposal of produced assets must be used for exports, consumption (intermediate or final) or as part of capital formation. The boundary line between those products that are retained in the economy and are used for consumption and those products that are used for capital formation is known as the asset boundary. The asset boundary for fixed assets consists of goods and services that are used in production for more than one year.

11.41 Two exclusions from the asset boundary should be noted at the outset. The first is that consumer durables are not treated as fixed assets. The services these durables produce are household services outside the production boundary of the integrated framework of national accounts. If, for example, a washing machine were to be treated as a fixed asset, the production boundary would have to be extended to include all laundry services, whether undertaken by machine or by hand. As it stands, the production boundary restricts laundry services to those services provided to other units but includes services provided by both machine and by hand. However, owner-occupied dwellings are not treated as consumer durables but are included within the asset boundary. The owner-occupiers are treated as owners of unincorporated enterprises producing housing services for their own consumption. For more information on an extended set of accounts which includes all unpaid household services produced for own final use, see chapter 34.

11.42 It is possible though that an asset is used for consumption purposes as well as for the purpose of producing goods and services. An example relates to the dual use of a car owned by a household for own travel and for providing taxi services to third parties. Such instances have become more frequent with the digitalisation of the economy, which has enhanced the possibilities to provide such market services. In these cases, the asset in question needs to be partitioned, with one part recorded as final consumption expenditure and the other part recorded as gross fixed capital formation.

11.43 The second exclusion is pragmatic rather than conceptual and concerns small tools. Some goods may be used repeatedly, or continuously, in production over many years but may nevertheless be small, inexpensive and used to perform relatively simple operations. Hand tools such as saws, spades, knives, axes, hammers, screwdrivers and spanners or wrenches are examples. If expenditures on such tools take place at a fairly steady rate and if their value is small compared with expenditures on more complex machinery and equipment, it may be appropriate to treat the tools as materials or supplies used for intermediate consumption. Some flexibility is needed, however, depending on the relative importance of such tools. In countries in which they account for a significant part of the value of the total stock of an industry's durable producers' goods, they may be treated as fixed assets and their acquisition and disposal by producers recorded under gross fixed capital formation.

11.44 Not all goods included within the asset boundary must be newly produced. Since assets have a long life, they may change hands but continue to function as fixed assets for their new owners. Thus it is important to define what existing fixed assets are and how they are treated in measuring gross fixed capital formation.

11.45 Nor are all services included within the asset boundary immediately recognizable. Important classes of services are included in the asset boundary because of the impact they have on the value of new or existing assets. These are improvements to existing assets and the cost of ownership transfer of assets. These are described below after defining existing fixed assets.

Existing fixed assets

11.46 Because assets have service lives that may range up to 50 years or more for dwellings or other structures,

their ownership may change several times before they are eventually scrapped, demolished or abandoned. An existing fixed asset is one whose value was included in the stock of fixed capital of at least one producer unit in the domestic economy at some earlier point in time either in the current period or in the immediately previous accounting period. In many countries, well-organized markets exist to facilitate the buying and selling of many kinds of existing fixed assets, notably automobiles, ships, aircraft, dwellings and other structures. Indeed, the number of existing dwellings bought and sold within a given time period may considerably exceed the number of new dwellings. In practice, most existing fixed assets will have been used in production by their current owners, but an existing capital good might be sold by its owner before it has actually been used.

11.47 In general, sales or other disposals of existing goods, whether fixed assets or not, are recorded as negative expenditures or negative acquisitions. Thus, when the ownership of an existing fixed asset is transferred from one resident producer to another, the value of the asset sold, bartered or transferred is recorded as negative gross fixed capital formation by the former and as positive gross fixed capital formation by the latter. The value of the positive gross fixed capital formation recorded for the purchaser exceeds the value of the negative gross fixed capital formation recorded for the seller by the value of the costs of ownership transfer incurred by the purchaser. The treatment of these costs is explained in more detail in a later section.

11.48 When the sale takes place between two resident producers, the positive and negative values recorded for gross fixed capital formation cancel out for the economy as a whole except for the costs of ownership transfer. Similarly, if an existing immovable fixed asset, such as a building, is sold to a non-resident, by convention the latter is treated as purchasing a financial asset that is the equity of a notional resident unit while the notional resident unit is deemed to purchase the asset, so that the sale and purchase of the asset takes place between resident units. However, if an existing movable fixed asset, such as a ship or aircraft, is exported, no positive gross fixed capital formation is recorded elsewhere in the economy to offset the seller's negative gross fixed capital formation.

11.49 Some durable goods, such as vehicles, may be classified as fixed assets or as consumer durables depending upon the owner and the purpose for which they are used. If, therefore, the ownership of such a good were transferred from an enterprise to a household to be used for final consumption, negative gross fixed capital formation is recorded for the enterprise and positive consumption expenditure by the household. If a vehicle owned by a household were to be acquired by an enterprise, it would be recorded as an acquisition of a "new" fixed asset by the enterprise, even though it is an existing good, and as negative consumption expenditure by the household. A similar treatment is applied to imports of used products acquired by resident producers as assets.

11.50 Thus, it is perfectly possible for gross fixed capital formation to be negative as a result of the sale or disposal of existing fixed assets, although aggregate gross fixed capital formation is unlikely to be negative for large groups of units such as subsectors, sectors or the economy as a whole.

Improvements to existing assets

11.51 Gross fixed capital formation may take the form of improvements to existing fixed assets, such as buildings or computer software, that increase their productive capacity, extend their service lives, or both. By definition, such gross fixed capital formation does not lead to the creation of new assets that can be separately identified and valued, but to an increase in the value of the asset that has been improved. Accordingly, it is the improved asset that is henceforth relevant to the integrated framework of national accounts and on which depreciation must be calculated subsequently.

11.52 A different treatment is applied to improvements to land. In this case the improvements are treated as the creation of a new fixed asset and are not regarded as giving rise to an increase in the value of the natural resource. If land, once improved, is further improved, then the normal treatment of improvements to existing fixed assets applies.

11.53 The distinction between ordinary maintenance and repairs that constitute intermediate consumption and those that are treated as capital formation is not clear cut. As explained in paragraphs 7.253 to 7.256, ordinary maintenance and repairs are distinguished by two features:

- They are activities that must be undertaken regularly in order to maintain a fixed asset in working order over its expected service life. The owner or user of the asset has no choice about whether or not to undertake ordinary maintenance and repairs if the asset in question is to continue to be used in production;
- Ordinary maintenance and repairs do not change the fixed asset's performance, productive capacity or expected service life. They simply maintain it in good working order, if necessary by replacing defective parts by new parts of the same kind.

11.54 On the other hand, improvements to existing fixed assets that constitute gross fixed formation must go well beyond the requirements of ordinary maintenance and repairs. They must bring about significant changes in some of the characteristics of existing fixed assets. They may be distinguished by the following features:

- The decision to renovate, reconstruct or enlarge a fixed asset is a deliberate investment decision that may be taken any time, even when the good in question is in good working order and not in need of repair. Major renovations of ships, buildings or other structures are frequently undertaken well before the end of their normal service lives;
- Major renovations, reconstructions or enlargements increase the performance or productive capacity of existing fixed assets or significantly extend their previously expected service lives, or both. Enlarging or extending an existing building or structure constitutes a major change in this sense, as does the refitting or restructuring of the interior of a building or ship or a major extension to or enhancement of an existing software system.

11.55 It is difficult to provide simple objective criteria that enable improvements to be distinguished from repairs because any repair may be said to improve the performance or extend the working life of the unrepaired asset. For example, machines may cease to function at all because of the failure of one small part. The replacement of such a part does not, however, constitute gross fixed capital formation. Thus, improvements have to be identified either by the magnitude of the changes in the characteristics of the fixed assets such as size, shape, performance, capacity, or expected service lives, or by the fact that improvements are not the kinds of changes that are observed to take place routinely in other fixed assets of the same kind, as part of ordinary maintenance and repair programmes.

Costs incurred on acquisition and disposal of assets

11.56 Purchasing a non-financial asset is often a complicated procedure that may involve using lawyers to establish legal title to the asset, engineers to certify that it is in satisfactory working order and so on. There may also be taxes to be paid occasioned by the change of ownership of the item. Further, in the case of highly complex machinery there may be significant costs associated with delivery and installation that were not included in the purchase price.

11.57 The economic benefits to be derived from the use of the asset in production have to cover these costs as well as the initial price of the asset. Costs incurred on acquisition of a fixed asset are treated as an integral part of the value of that unit's gross fixed capital formation. The value at which the asset enters the balance sheet of its new owner therefore includes these costs. This applies to both new and existing assets.

11.58 Just as there may be costs incurred on the acquisition of a non-financial asset, there may also be costs incurred on the disposal of an asset. Some of these may be parallel to those costs incurred on acquisition, for example legal fees and disinstallation costs. However, in the case of some significantly large and important assets, such as oil rigs and nuclear power stations, there may also be major costs associated with the decommissioning of the asset at the end of its productive life. For some land sites, such as those used for landfill, there may be large costs associated with rehabilitation of the site. These are referred to collectively as terminal costs.

11.59 ***All these costs associated with acquiring and disposing of assets (other than inventories) may be described as costs of ownership transfer.*** The costs of ownership transfer consist of the following kinds of items:

a. All professional charges or commissions incurred by both units acquiring or disposing of an asset such as fees paid to lawyers, architects, surveyors, engineers and valuers, and commissions paid to

estate agents and auctioneers;

b. Any trade and transport costs separately invoiced to the purchaser;

c. All taxes payable by the unit acquiring the asset on the transfer of ownership of the asset;

d. Any tax payable on the disposal of an asset;

e. Any delivery and installation or disinstallation costs not included in the price of the asset being acquired or disposed of; and

f. Any terminal costs incurred at the end of an asset's life such as those required to render the structure safe or to restore the environment in which it is situated. Although incurred at the end of the asset's life, such terminal costs are added to the acquisition value of the assets (see paragraphs 11.233 to 11.235).

11.60 All these costs of ownership transfer are treated as gross fixed capital formation. They are attributed to the purchaser or seller of the asset according to which unit bears the responsibility of meeting the costs. The time of recording of these costs is discussed below. The costs are written off via depreciation over the period the new owner expects to hold the asset, as discussed in the section on depreciation except for the terminal costs that should be written off over the whole life of the asset.

11.61 A distinction should be made between costs of ownership transfer related to acquisitions and disposals of produced non-financial assets versus those related to acquisitions and disposals of non-produced non-financial assets. In the former case, the costs of ownership transfer are treated as an integral part of the value of that unit's gross fixed capital formation. In the latter case, the relevant costs are treated as a separate category of gross fixed capital formation, which add to the value of the non-produced asset on the balance sheet. Moreover, costs of ownership transfer related to non-produced natural resources are classified under acquisitions less disposals of natural resources, whereas the costs of ownership transfers related non-produced non-financial assets other than natural resources is classified under acquisitions less disposals of produced non-financial assets (excluding natural resources).

Time of recording

11.62 The general principle for the time of recording of acquisitions less disposals of fixed assets is when the ownership of the fixed assets is transferred to the institutional unit that intends to use them in production. Except in two special cases, this time is not generally the same as the time at which the fixed assets are produced. Nor is it necessarily the time at which they are put to use in the production of other goods or services.

11.63 The two exceptions cover assets that take some time to produce such as construction projects, intellectual property products and the like. In general, incomplete construction projects are treated as work-in-progress. They are reclassified from inventories to fixed capital when complete and delivered to the unit intending to use them as fixed assets. The same principles apply for assets produced on own account, i.e., the partially completed products are recorded as work-in-progress until completion. As this may be more difficult to apply in practice, particularly in the case of fixed assets such as intellectual property products, the partially completed products produced on own account may need to be recorded directly as fixed capital formation as work takes place. The same principles as the ones for construction projects apply to some cultivated biological resources yielding repeat products (see section D).

11.64 When assets are developed under a contract of sale, the producer records work-in-progress as normal. However, in the case of an effective transfer of ownership, a transfer of the partially completed product to the final owner should be recorded. Such acquisitions of partially completed products are recorded as work-in-progress in the accounts of the final owner until the completion of the fixed asset. In the case of stage payments, any differences between the value of the stage payments and the value of the effective transfer of ownership should be recorded as other accounts receivable/payable. If the effective transfer of ownership cannot be determined in practice, stage payments could be used as a proxy for the transfer of ownership. When there is no contract of sale agreed in advance, the output produced by the enterprise must be recorded as work-in-progress or as additions to the producers' inventories of finished goods, depending on whether

the product is completed. For example, finished dwellings built speculatively remain as additions to the producers' inventories of finished goods until they are sold or otherwise acquired by users.

Ownership of assets

11.65 In most cases, the ownership of fixed assets is straightforward; it is the unit that acquires the asset for use in production. There are, however, three exceptions to be noted. One concerns assets subject to a financial lease; the second concerns assets produced by communal effort; the third concerns immovable assets owned by non-residents.

11.66 A financial lease is a contract between a lessor and a lessee whereby the lessor legally owns the good but the terms of the lease are such that the lessee takes over both the economic risks and rewards of using the asset in production. In effect, therefore, the lessee becomes the economic owner of the asset even if the lessor remains the legal owner. In these cases, the asset is recorded as being acquired by the lessee in return for a loan extended by the lessor to the lessee. The asset is then recorded on the balance sheet of the lessee and not the lessor. The payments due under the lease arrangement are treated as forming a repayment of the principal of the loan and a payment of interest and possibly a service charge. More details of these arrangements are given in chapter 27.

11.67 Certain structures may be produced for own communal use by groups of households: for example, buildings, roads, bridges, etc. After they are finished, the ownership of such structures may then be transferred to some government unit that assumes responsibility for their maintenance. When the transfer occurs, the gross fixed capital formation on own account originally attributed to the group of households is cancelled by their negative gross fixed capital formation resulting from the capital transfer in kind made to the government unit. The final gross fixed capital formation remaining is that of the government unit resulting from its acquisition of the asset through the capital transfer in kind. If no such transfer exists and the structure remains the communal property of the group of households responsible for its construction, an NPISH providing collective services should be created.

11.68 All buildings and other structures within the economic territory are deemed, by convention, to be owned by resident units. If the economic owner (or lessee under a financial lease) would not otherwise qualify as a resident unit, a notional resident unit is created for this purpose. The notional resident unit is assumed to purchase (or lease) the building or structure. The legal owner (or lessor) is deemed to hold equivalent equity in the notional resident unit. If a building or structure is owned in part by a resident unit and in part by one or several non-residents, there is one notional resident unit established with each of the owners having a proportionate share of the equity of the notional resident unit.

11.69 A further consideration to be taken into account in determining ownership concerns assets built under a public-private partnership (PPP), such as a private finance initiative (PFI) or a build, own, operate, transfer (BOOT) scheme or some other similar shorthand. More guidance on how to ascribe the ownership of such schemes is given in chapter 30.

Valuation

11.70 The various components of acquisitions and disposals of fixed assets, including those which are classified under natural resources, are listed below:

a. Value of fixed assets purchased;

b. Value of fixed assets acquired through barter;

c. Value of fixed assets received as capital transfers in kind;

d. Value of fixed assets retained by their producers for their own use, including the value of any fixed assets being produced on own account for which it cannot be determined whether or not they are fully completed or mature;

minus

e. Value of existing fixed assets sold;

f. Value of existing fixed assets surrendered in barter;

g. Value of existing fixed assets surrendered as capital transfers in kind.

Acquisitions of partially completed fixed assets are recorded as work-in-progress until the asset has been completed; see also paragraphs 11.63 and 11.64. Items (a) to (d) include new assets, existing assets, the value of improvements to assets and the cost of ownership transfers in respect of these assets. Items (e), (f) and (g) include disposals of assets that may cease to be used as fixed assets by their new owners: for example, vehicles sold by enterprises to households for their personal use, assets that are scrapped or demolished by their new owners and assets that are exported.

11.71 Fixed assets acquired through barter are valued at their estimated purchasers' prices plus any costs of ownership transfer. In practice, neither taxes on products nor transportation costs may apply, in which case the purchasers' prices will not differ from the basic prices of the product. Fixed assets produced for own gross fixed capital or assets transferred in kind are valued at their estimated basic prices, or by their costs of production when satisfactory estimates of their basic prices cannot be made.

11.72 Special considerations apply to fixed assets produced by communal construction by households. If the value of the asset must be estimated on the basis of costs, and some or all of the labour is provided free, as may happen, an estimate of what the cost of paid labour would be must be included in the estimated total production costs using wage rates for similar kinds of labour in the vicinity or region. Otherwise, the value of the finished structure will be seriously underestimated. However, this estimate is not treated as remuneration of employees but as mixed income. This income accrues to the households concerned who are then assumed to use it to "purchase" the final construction. If the construction is then handed over to government, there is negative gross fixed capital formation recorded by the community offsetting their previously recorded acquisition of the asset and positive gross fixed capital formation recorded by government, along with a capital transfer of the value of the construction from the community to government.

Transactions in fixed assets

11.73 Gross fixed capital formation in a particular category of fixed asset consists of the value of producers' acquisitions of new and existing products of this type less the value of their disposals of fixed assets of the same type. Gross fixed capital formation is not recorded until the ownership of the fixed assets is transferred to the unit that intends to use them in production. In the case of transfers of partially completed fixed assets, the asset is to be recorded as work-in-progress until the completed asset has been transferred. New assets that have not yet been transferred form part of additions to inventories of finished goods held by the producers of the assets. Similarly, an imported product is not recorded as gross fixed capital formation until it is acquired by the unit that intends to use it.

11.74 Table 11.2 shows the changes in assets side of table 11.1 expanded to show the entries for transactions in fixed assets, excluding those related to natural resources. It will be noted that the integrated framework of national accounts recommends showing acquisitions of certain categories of these assets separately from disposals of those assets when this provides analytically useful data.

11.75 In presentations of the capital account, gross fixed capital formation is usually shown by type of asset, where the accounting principles of paragraph 11.70 are applied to each category of fixed asset in turn. Table 11.2 also incorporates the classification of fixed assets (excluding natural resources) used in the integrated framework of national accounts. Each of the main categories of fixed assets is defined and described in turn below.

11.76 The integrated framework of national accounts does not formally include a division between tangible and intangible assets in the classification. However, the categories of dwellings, other buildings and structures, machinery and equipment and weapons systems (and biological resources; see section D) can be taken to correspond to tangible assets and the other categories to intangible assets.

Table 11.2: The capital account - the classification of fixed assets

Changes in assets

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
NF1	Acquisitions less disposals of produced non-financial assets (excluding natural resources)	141	- 4	11	30	2	180			180
NF11	Gross fixed capital formation	257	8	35	44	5	349			349
NF11 AN111	Dwellings									
NF11 AN112	Other buildings and structures									
NF11 AN113	Machinery and equipment									
NF11 AN114	Weapons systems									
NF11 AN115	Intellectual property products									
NF11 AN116	Costs of ownership transfer on non-produced assets (excluding natural resources)									
NF12	Depreciation (-)	- 142	- 12	- 27	- 20	- 3	- 204			- 204
NF13	Changes in inventories	24	0	0	1	0	25			25
NF14	Acquisitions less disposals of valuables	2	0	3	5	0	10			10
NF2	Acquisitions less disposals of non-produced non-financial assets (excluding natural resources)	- 1	0	0	1	0	0	0		0
NF3	Acquisitions less disposals of natural resources	- 8	0	- 16	5	1	- 18			- 18
NF31	Gross fixed capital formation	23	0	0	4	0	27			27
NF31 AN331	Biological resources yielding repeat products									
NF31 AN3311	Animal resources yielding repeat products									
NF31 AN3312	Tree, crop and plant resources yielding repeat products									
NF31 AN3321	Cultivated biological resources yielding once-only products									
NF31 AN35	Costs of ownership transfer on non-produced natural resources									
NF32	Depreciation (-)	- 15	0	0	- 3	0	- 18			- 18
NF33	Changes in inventories	2	0	0	1	0	3			3
NF34	Acquisitions less disposals of non-produced natural resources	- 6	0	2	3	1	0			0
NF35	Depletion (-)	- 12		- 18	0		- 30			- 30
D9r	Capital transfers, receivable									
D9p	Capital transfers, payable									
B9	*Net lending (+) / net borrowing (–)*	- 80	- 3	- 77	174	- 4	10	- 10		0

Dwellings

11.77 ***Dwellings (AN111) are buildings, or designated parts of buildings, that are used entirely or primarily as residences, including any associated structures, such as garages, and all permanent fixtures customarily installed in residences.*** Houseboats, barges, mobile homes and caravans used as principal residences of households are also included, as are public monuments identified primarily as dwellings.

11.78 Examples include residential buildings, single and multiple dwelling buildings as well as residential buildings for communities, retirement homes, hostels, orphans, etc., and prefabricated buildings, including those intended for housing or for buildings associated with housing such as garages.

11.79 The costs of clearing and preparing the site for construction are part of the costs of new dwellings (and other buildings and structures) and are therefore included in the value of the buildings.

11.80 Incomplete dwellings are recorded as work-in-progress until completion, even if the ultimate user is deemed to have taken ownership, either because the construction is on own-account or as evidenced by the existence of a contract of sale or purchase. In the latter case, the work-in-progress is recorded in the accounts of the purchaser.

11.81 Dwellings acquired for military personnel are included because they are used for the production of housing services, in the same way as dwellings acquired by civilian units.

Other buildings and structures

11.82 ***Other buildings and structures (AN112) comprise non-residential buildings, other structures and land improvements.*** These are described in turn below.

Buildings other than dwellings

11.83 ***Buildings other than dwellings (AN1121) include whole buildings or parts of buildings not designated as dwellings (also known as residential buildings). Fixtures, facilities and equipment that are integral parts of the structures are included.*** For new buildings, costs of site clearance and preparation are included. Public monuments identified primarily as non-residential buildings are also included.

11.84 Examples include non-residential buildings, such as warehouses and industrial buildings, commercial buildings, buildings for public entertainment, hotels, restaurants, schools, hospitals, prisons etc. Prisons, schools and hospitals are regarded as buildings other than dwellings despite the fact that they may shelter institutional households.

Other structures

11.85 ***Other structures (AN1122) include structures other than buildings, including the cost of the streets, sewer, etc***. The costs of site clearance and preparation are also included. Public monuments for which identification as dwellings or non-residential buildings is not possible are included as are shafts, tunnels and other structures associated with mining mineral and energy resources, and the construction of sea walls, dykes, flood barriers etc. intended to improve the quality and quantity of land adjacent to them. The infrastructure necessary for aquaculture such as fish farms and shellfish beds is also included.

11.86 Examples include civil engineering works, such as highways, streets, roads, railways and airfield runways; bridges, elevated highways, tunnels and subways; waterways, harbours, dams and other waterworks; long-distance pipelines, communication and power lines; local pipelines and cables, ancillary works; constructions for mining and manufacture; and constructions for sport and recreation.

11.87 The construction of new public monuments constitutes gross fixed capital formation and similarly, major improvements to existing public monuments are also included in gross fixed capital formation. ***Public monuments are buildings and other structures of particular historical, national, regional, local, religious or symbolic significance.*** They are accessible to the general public, and visitors are often charged for admission to the monuments or their vicinity. Their owners, who may be government units, non-profit institutions serving households (NPISHs), corporations or households, typically use public monuments to produce cultural or entertainment-type services. In principle, the gross fixed capital formation in public monuments should be included in dwellings, non-residential buildings, and other structures as appropriate; in practice, it may be desirable to classify them with other structures. Depreciation on new monuments, or on major improvements to existing monuments, should be calculated on the assumption of appropriately long service lives.

Land improvements

11.88 ***Land improvements (AN1123) are major improvements in the quantity, quality or productivity of land, or prevent its deterioration. Such improvements are recorded as capital formation and the additional value is shown as a separate asset within produced non-financial assets (excluding natural resources).*** Activities such as land clearance, land contouring, creation of wells and watering holes that are integral to the land in question are to be treated as resulting in land improvements. Activities such as the creation of seawalls, dykes, dams and major irrigation systems which are in the vicinity of the land but not integral to it, which often affect land belonging to several owners and which are often carried out by government, result in assets that are to be classified as structures.

11.89 Land improvements represent a category of fixed assets distinct from the non-produced land asset as it existed before improvement. Land before improvements are effected remains a non-produced asset and as such is subject to holding gains and losses separately from price changes affecting the improvements. In cases where it is not possible to separate the value of the land before improvement and the value of those improvements, the land should be allocated to the category that represents the greater part of the value.

Machinery and equipment

11.90 ***Machinery and equipment (AN113) cover transport equipment, machinery for information, communication and telecommunications (ICT) equipment, and other machinery and equipment used for production purposes***. As explained above, machinery and equipment under a financial lease are treated as acquired by the user (lessee) rather than as acquired by the lessor. Tools that are relatively inexpensive and purchased at a relatively steady rate, such as hand tools, may be excluded. Also excluded are machinery and equipment integral to buildings that are included in dwellings and non-residential buildings. Machinery and equipment other than weapons systems acquired for military purposes are included; weapons systems form another category.

11.91 Machinery and equipment such as vehicles, furniture, kitchen equipment, computers, communications equipment, etc. that are acquired by households for purposes of final consumption are not fixed assets and their acquisition is not treated as gross fixed capital formation. However, houseboats, barges, mobile homes and caravans that are used as the principal residences of households are treated as dwellings, so that their acquisition by households is included in gross fixed capital formation.

Transport equipment

11.92 ***Transport equipment (AN1131) consists of equipment for moving people and objects.*** Examples include transport equipment, such as motor vehicles, trailers and semi-trailers; ships; railway and tramway locomotives and rolling stock; aircraft and spacecraft; and motorcycles, bicycles, etc. Parts and accessories of transport equipment are not included.

Information, computer and telecommunications (ICT) equipment

11.93 ***Information, computer and telecommunications (ICT) equipment (AN1132) consists of devices using electronic controls and also the electronic components forming part of these devices.*** In practice, the coverage of ICT equipment is mostly restricted to computer hardware and telecommunications equipment.

Other machinery and equipment

11.94 ***Other machinery and equipment (AN1139) consists of machinery and equipment, other than transport equipment and ICT-equipment.*** Examples include products other than parts and items, such as general purpose machinery, special purpose machinery, office, accounting and computing equipment, electrical machinery and apparatus, radio, television and communication equipment and apparatus, and medical appliances, precision and optical instruments, watches and clocks. Other examples are products other than

parts, such as fuel elements (cartridges) for nuclear reactors, furniture, musical instruments, sports goods, and steam generators except central heating boilers.

Weapons systems

11.95 ***Weapons systems (AN114) are defined as arms for military purposes meeting the asset boundary. They include vehicles and other equipment such as warships, submarines, military aircraft, tanks, missile carriers and launchers, etc.*** Most single-use weapons they deliver, such as ammunition, missiles, rockets, bombs, etc., are treated as military inventories. However, some single-use items, such as certain types of ballistic missile with a highly destructive capability, may provide an ongoing service of deterrence against aggressors and therefore meet the general criteria for classification as fixed assets.

Costs of ownership transfer on non-produced assets (excluding natural resources)

11.96 The costs of ownership transfer on non-produced assets (excluding natural resources) represent produced assets but their value cannot be integrated with the value of another produced asset. They must therefore be shown as a separate category of gross fixed capital formation. Costs of ownership transfer are defined in paragraphs 11.56 to 11.61.

Intellectual property products

11.97 Examples of intellectual property products are the results of research and development, mineral exploration and evaluation, computer software (including artificial intelligence), data and databases, and entertainment, literary or artistic originals. They are characterized by the fact that most of their value is attributable to intellectual endeavour. They can be described in general terms in the following way. ***Intellectual property products (AN115) are assets resulting from research, development, investigation or innovation, leading to knowledge or the creation of artificial intelligence systems that the developers can market or use to their own economic benefit in production because use of the knowledge is restricted by means of legal or other protection.*** The knowledge may be embodied in a free-standing product or may be embodied in another. When the latter is the case, the product embodying the knowledge has an increased price relative to a similar product without this embodied knowledge. The knowledge remains an asset as long as its use can create some form of monopoly profits for its owner. When it is no longer protected or becomes outdated by later developments, it ceases to be an asset.

11.98 Some intellectual property products are used solely by the unit responsible for their development or by a single unit to whom the product is transferred. Mineral exploration and evaluation is an example. Other products, such as computer software, data and databases, and artistic originals, are used in two forms. The first is the original or "master copy". This is frequently controlled by a single unit but exceptions exist as explained below. The original is used to make copies that are in turn supplied to other units. The copies may be sold outright or made available under a licence.

11.99 A copy sold outright may be treated as a fixed asset if it satisfies the necessary conditions, that is, it will be used in production for a period in excess of one year. A copy made available under a licence to use may also be treated as a fixed asset if it meets the necessary conditions, that is, it is expected to be used in production for more than one year and the licensee assumes all the risks and rewards of ownership. A good, but not necessary, indication is if the licence to use is purchased with a single payment for use over a multiyear period. If the acquisition of a copy with a licence to use is purchased with regular payments over a multiyear contract and the licensee is judged to have acquired economic ownership of the copy, then it should be regarded as the acquisition of an asset. If regular payments are made for a licence to use without a long-term contract, then the payments are treated as payments for a service. If there is a large initial payment followed by a series of smaller payments in succeeding years, the initial payment is recorded as gross fixed capital formation and the succeeding payments are treated as payments for a service. If the licence allows the licensee to reproduce the original and subsequently assume responsibility for the distribution, support and maintenance of these copies, then this is described as a licence to reproduce and should be regarded as the sale of part or whole of the original to the unit holding the licence to reproduce.

11.100 Intellectual property products such as software may be hosted in a cloud computing datacentre. This does not change the ownership of the license as a software asset. A user of remotely accessed software may purchase a license from a software publisher as a software asset and separately purchase the cloud computing infrastructure services of the processing time and storage needed to utilise the hosted software. Cloud computing users who do not have their own software license incur pay-per-use software license charges when they run software in the cloud. The entire fee for accessing the software is retained by the cloud computing enterprise if it owns the software (either because it is the software developer or because it has acquired all rights to the software) or has purchased a license from the software publisher that includes rights to offer pay-per-use software rentals. In these cases, the software original or software copy is a fixed asset of the cloud computing enterprise. In other cases, the cloud computing provider passes on a portion of the pay-per-use software license fees to the software publisher and receives margin income from reselling software services supplied by the software publisher. However, it may be more practical to treat the cloud computing enterprise as purchasing intermediate inputs of services from the software publisher and supplying software services to the cloud computing users than as supplying distributing software services on margin.

11.101 Subscriptions from software publishers are not cloud computing or hosting services even if the publisher delivers the software via remote access over a network. Software publishers often take advantage of remote access to distribute regular updates, making the product seem like software-as-a-service. Software-as-a-service would be normally recorded as intermediate consumption, but if the user has purchased a long-term software license, the subscription should be recorded as a software asset of the license holder (i.e., the user of the software), and the periodic software updates should be viewed as maintenance of this asset. For example, a license to use a piece of software over a period lasting more than a year would be recorded as the acquisition of a fixed asset even if the software is frequently updated during the term of the license. For more information on the impact of digitalization on the measurement of the economy, see chapter 22.

11.102 When copies are distributed by the owner free of charge, then no flows between the owner and recipients are recorded in the integrated framework of the SNA. If, despite making copies freely available, the owner still expects to obtain economic benefits, then the present value of those economic benefits should be recorded in its balance sheet. It may be that when the information was distributed freely it was incomplete and the owner intends to make more detailed information available at a price later. Software distributed freely at the beta test stage is one example. Alternatively, the owner justifies the expenditure on the basis of the economic benefits to its own production and may make copies available for marketing purposes, generating goodwill or in cases it considers deserving.

11.103 A more prominent example in the age of digitalisation concerns open-source software which is developed, maintained, and supplied through the contributions of developers from universities, government research institutions, non-profit institutions, private corporations and individuals. The contributions by developers provided for free may be motivated by the future use of the resulting software. The value of such open-source software produced by programmers employed by corporations, government or NPISHs is usually already included in measures of own-account software investment as estimated by the sum of costs method, unless the developer is an individual not being employed and remunerated. Again, for more information, see chapter 22.

11.104 It is often the case for some intellectual property products that some of the economic benefits accrue to units other than the owner to the extent they stimulate the production of other intellectual property products by other units. Examples of such spillovers include a breakthrough in the development of a new class of drug leading other enterprises to develop competing drugs of the same type, and the success or failure of mineral exploration in a particular zone informing other units with exploration rights in a neighbouring zone. These are treated in the same way as other externalities in the SNA. Unless there is a quantifiable monetary impact for one or both parties, nothing is recorded in the integrated framework of national accounts. More detailed guidance can be found in the *Handbook on Deriving Capital Measures of Intellectual Property Products* .

Research and development

11.105 Intellectual property products include the results of research and development (R&D). ***Research and [experimental] development (AN1151) consists of the value of creative work undertaken on a systematic basis to increase the stock of knowledge, including knowledge of humans, culture or society, and use of***

this stock of knowledge for the purpose of discovering and developing new products, including improved versions or qualities of existing products, or discovering or developing new or more efficient processes of production. This does not extend to including human capital as assets. The value of research and development (R&D) should be determined in terms of the economic benefits it is expected to provide in the future. This includes the provision of public services in the case of R&D acquired by government. In principle, R&D that does not provide any future economic benefits to its owner or to the society at large does not constitute a fixed asset and should be treated as intermediate consumption. Unless the market value of the R&D is observed directly, it may, by convention, be valued at the sum of costs, including the cost of unsuccessful R&D, and excluding the capital services (i.e., depreciation and net return to capital) from previously produced R&D, as described in the annex to chapter 4 on Flows, stocks and accounting rules and chapter 7 on Production Account.

11.106 R&D should be recognized as part of capital formation. In order to achieve this, several issues have to be addressed. These include deriving measures of research and development, price indices and service lives. Specific guidelines, together with handbooks on methodology and practice, provide a useful way of working towards solutions that give the appropriate level of confidence in the resulting measures.

11.107 With the inclusion of R&D expenditure as capital formation, patented items no longer feature as assets in the integrated framework of the SNA. The patent agreement is to be seen instead as the legal agreement concerning the terms on which access to the R&D is granted. The patent agreement is a form of licence to use which is treated as giving rise to payments for services or the acquisition of an asset.

Mineral exploration and evaluation

11.108 ***Mineral exploration and evaluation (AN1152) consists of the capitalised value of expenditures on exploration for mineral and energy deposits and the subsequent evaluation of the discoveries.*** These expenditures include pre-licence costs, licence and acquisition costs, appraisal costs and the costs of actual test drilling and boring, as well as the costs of aerial and other surveys, transportation costs, etc., incurred to make it possible to carry out the tests. Re-evaluations may take place after commercial exploitation of the reserve has started and the cost of these re-evaluations is also included in gross fixed capital formation.

11.109 Mineral exploration is undertaken in order to discover new mineral and energy deposits that may be exploited commercially. Such exploration may be undertaken on own account by enterprises engaged in mining or the extraction of such deposits. Alternatively, specialized enterprises may carry out exploration either for their own purposes or for fees. The information obtained from exploration influences the production activities of those who obtain it over a number of years. The expenditures incurred on exploration within a given accounting period, whether undertaken on own account or not, are therefore treated as expenditures on the acquisition of an intellectual property product and included in the enterprise's gross fixed capital formation.

11.110 The expenditures included in gross fixed capital formation include not only the costs of actual test drillings and borings, but also the costs incurred to make it possible to carry out tests, for example, the costs of aerial or other surveys, transportation costs, etc. The value of the resulting asset is not measured by the value of new deposits discovered by the exploration but by the value of the expenditures incurred on exploration during the accounting period. When the activities are carried out by contractors, the prices charged by these contractors, including their operating surplus, become part of the value of the expenditures incurred. Depreciation may be calculated for such assets by using average service lives similar to those used by mining or oil corporations in their own accounts.

Computer software, data and databases

11.111 Computer software, data and databases are grouped together because a computerized database, including the relevant data, cannot be developed independently of a database management system (DBMS), which is itself computer software.

Computer software, including artificial intelligence

11.112 ***Computer software, including artificial intelligence systems (AN11531), consists of computer programs,***

program descriptions and supporting materials for both systems and applications software, that are expected to be used in production for more than one year. It also includes artificial intelligence systems. Gross fixed capital formation in computer software includes both the initial development and subsequent extensions of software as well as acquisition of copies that are classified as assets.

11.113 The development of computer software represents the development of an intellectual property product. It is treated as an asset if it is to be used in production by its owner for more than one year. The software may be intended only for own use or may be intended for sale by means of copies. If copies of the software are sold on the market, their treatment follows the principles described in paragraphs 11.99 to 11.103. Software purchased on the market is valued at purchasers' prices, while software developed in-house is valued at its estimated basic price, or at its costs of production if it is not possible to estimate the basic price.

Data and databases

11.114 ***Data and databases (AN11532) consist of electronic files of data, including the information content (i.e., the data themselves), organized in such a way as to permit resource-effective access and use of the data, either for own use in production for more than one year, or for sale as an item or for sale by means of a licence to access the information contained***. The standard conditions apply for when an own-use database, a purchased database or the licence to access a database constitutes an asset.

11.115 Data and databases are conceptually distinct types of intellectual property products, but they are produced using similar inputs and measuring them separately is often difficult. Moreover, transactions in databases generally include the value of the data stored in the database. Data and databases are therefore combined into a single detailed class of intellectual property product. The creation of data and databases will generally have to be estimated by a sum of costs method. (See paragraphs 22.21 to 22.32 for more information.)

11.116 The cost of the database management system (DBMS) used should not be included in the costs of creating a database, but be treated as a computer software asset unless it is used under an operating lease. The cost of preparing data in the appropriate format is included in the cost of the database but not the cost of acquiring or producing the data (see below). Other costs will include staff time estimated on the basis of the amount of time spent in developing the database, an estimate of the capital services of the non-financial assets used in developing the database and costs of goods and services used as intermediate consumption.

11.117 The main cost elements related to data consist of the costs of planning, preparing and developing a data production strategy; the costs associated with accessing, recording and storing information embedded in observable phenomena, which may include, but is not limited to, explicit purchases related to accessing observable phenomena or already produced data; and the costs associated with processing and cleaning the data to allow for incorporation into a database and subsequent use in productive activities.

11.118 Data and databases for sale should be valued at their market price, which includes the value of the information content. If the value of a software component is available separately, it should be recorded as the sale of software.

Entertainment, literary and artistic originals

11.119 ***Entertainment, literary and artistic originals (AN1154) consist of the original films, series and other visual recordings, sound recordings, games, manuscripts, tapes, models, etc., on which entertainment, literary and artistic output, etc., are recorded or embodied.*** Such works are frequently developed on own account. Subsequently they may be sold outright or by means of licences. The standard conditions on when the originals and copies are recognized as fixed assets apply. If an original is produced as a valuable, its production does not count as own account production of a fixed asset but it may have been classified as work-in-progress.

11.120 An original purchased on the market is valued at the purchaser's price**.** One developed in-house is valued at its estimated basic price or at its costs of production if it is not possible to estimate the basic price.

11.121 Households may produce user-generated content on digital platforms, which has an expected service life of more than one year. If the household receives remuneration from the content that it creates and uploads (e.g.,

advertising or subscription revenue), the investment in the relevant entertainment, literary or artistic original is within the production boundary of the integrated framework of national accounts, and the asset could be valued either at the present value of the future economic benefits generated with the asset, or as the sum of costs needed to produce the asset.

11.122 Creation of entertainment, literary and artistic originals for personal enjoyment – a common leisure activity – is outside the production boundary of the integrated framework of the SNA. A complicating factor is that online platforms may benefit from user-generated content. For example, when personal posts attract the user's followers to the platform, they provide economic benefits, for example in the form of advertising revenue, to the platform. However, user-generated content cannot be considered an asset of the platform. The economic benefits accruing to the platform are externalities, positive spillovers of the user's production of leisure services. For more information on the impact of digitalisation on the measurement of the economy, see chapter 22.

Other intellectual property products

11.123 ***Other intellectual property products (AN1159) include intellectual property products used in production for more than a year, which are not captured as research and development, mineral exploration and evaluation, computer software, data and databases, or entertainment, literary and artistic originals.***

2. Changes in inventories (excluding natural resources)

11.124 ***Changes in inventories (excluding natural resources) (AN12) are measured by the value of the entries into inventories less the value of withdrawals and less the value of any recurrent losses of goods held in inventories during the accounting period.*** Some of these acquisitions and disposals are attributable to actual purchases or sales, but others reflect transactions that are internal to the enterprise.

11.125 It is useful to distinguish between two functions performed by an enterprise: its function as a producer of goods and services and its function as an owner of assets. When a good is entered into inventories it is acquired as an asset by the enterprise in its capacity as owner either by purchase (or barter) or by an internal transaction with itself as the producer. Conversely, a good leaving inventories represents the disposal of an asset by the owner either by sale or other use, by an internal transfer to the producer or possibly as a result of recurrent losses (recurrent wastage, accidental damage or pilfering).

Storage and stocks of inventories

11.126 Most goods going into inventories simply remain there until they are withdrawn in the same state as when they entered. Not infrequently, the price of the goods will have increased while they are in inventories, but these increases are not due to production but are simply holding gains. There are some goods, though, where the passage of time in store changes the character of the goods. In such cases, the increase in value due to storage is to be treated as production and not as holding gains, though holding gains (or losses) may occur as well.

11.127 The indication that storage is being undertaken as a production activity is that the price of the good stored, relative to the general level of prices, is expected to increase by a certain amount over a predetermined time. For example, wine that is several years old is more valuable than the current year's vintage by a predictable factor.

11.128 The activity of storage may be undertaken by any institutional unit, not just the original producer of the product or may be undertaken by several units in succession if the ownership of the goods changes during storage.

11.129 The goods in storage are classified as work-in-progress and not finished goods. The increase in value during the accounting period up to the expected level at that time is treated as production of storage; any difference from this level is treated as a holding gain or loss. The method of valuing storage is described in the annex to chapter 7 on Production account. The expected level of price increase for items being stored for more than

one year, though, needs to be calculated in accordance with the principles of valuing work-in-progress described below.

Valuation

11.130 The enterprise in its capacity as a producer may obtain goods or services for intermediate consumption either by purchasing them on the market for immediate use or by internal transfers out of inventories. In order to ensure that all the goods and services used for intermediate consumption are consistently valued at current prices, the goods transferred out of inventories are valued at purchasers' prices current at the time of the withdrawal from inventories.

11.131 Similarly, the output produced by the producer may either be sold or otherwise disposed of or be transferred to inventories as finished products or work-in-progress. In order to ensure that output is consistently valued, finished goods transferred into inventories are valued as if they were sold at that time, while additions to work-in-progress are given the value they have at the time they are added to inventories.

Valuation of work-in-progress (excluding natural resources)

11.132 Much work-in-progress is of short duration and occurs only because production is a continuous process and some goods will be incomplete at the end of one accounting period but will be completed long before the end of the next. For output with a production period of a year or less, and assuming that prices and costs remain stable during the period of production, the value of the additions to work-in-progress for non-agricultural products within a given accounting period can be approximated by calculating the proportion of the total production costs incurred in that period and applying that ratio to the basic price realized by the finished product. Thus, the value of the output of the finished product is distributed over the accounting periods in which it was produced in proportion to the costs incurred in each period. If the average levels of prices and costs change from period to period, the output should be allocated initially using the prices and costs at the time the production is finished, and then the values of the work-in-progress thus calculated for earlier periods should be recalculated in proportion to the change in average cost levels from period to period.

11.133 There are important activities, such as construction of buildings, structures and complex machinery, where the production process may take several years. In these cases, the valuation of the partially complete product requires careful consideration especially since such large projects are by their nature very costly.

11.134 Even if one fifth of the work involved is put in place annually over a period of five years, it does not follow that one fifth of the value (assuming zero inflation for simplicity) should be recorded in each year. The work put in place in the first year cannot be used for four more years and so the value of it must be discounted to allow for this delay. In the second year, the value of the work put in place in the first year will increase by one discount factor and this should be added to the value of the work put in place in the second year and so on. This case is discussed in more detail in chapter 17 on Capital services.

Transactions in inventories

11.135 The transactions in the capital account relating to inventories show the change in the level of inventories of each type. The changes comprise the additions less withdrawals and less regular losses from inventories. Table 11.3 shows the expansion of table 11.1 to incorporate changes in inventories. Each of the categories is described and defined below.

Table 11.3: The capital account - changes in inventories and valuables

Changes in assets

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
NF1	Acquisitions less disposals of produced non-financial assets (excluding natural resources)	141	- 4	11	30	2	180			180
NF11	Gross fixed capital formation	257	8	35	44	5	349			349
NF12	Depreciation (-)	- 142	- 12	- 27	- 20	- 3	- 204			- 204
NF13	Changes in inventories	24	0	0	1	0	25			25
NF13 AN121	Materials and supplies									
NF13 AN122	Work-in-progress (excluding produced natural resources)									
NF13 AN123	Finished goods									
NF13 AN124	Military inventories									
NF13 AN125	Goods for resale									
NF14	Acquisitions less disposals of valuables	2	0	3	5	0	10			10
NF14 AN131	Precious metals and stones									
NF14 AN132	Antiques and other art objects									
NF14 AN139	Other valuables									
NF2	Acquisitions less disposals of non-produced non-financial assets (excluding natural resources)	- 1	0	0	1	0	0	0		0
NF3	Acquisitions less disposals of natural resources	- 8	0	- 16	5	1	- 18			- 18
NF31	Gross fixed capital formation	23	0	0	4	0	27			27
NF32	Depreciation (-)	- 15	0	0	- 3	0	- 18			- 18
NF33	Changes in inventories	2	0	0	1	0	3			3
NF33 AN333	Work-in-progress on cultivated biological resources									
NF33 AN3331	Work-in-progress on cultivated biological resources yielding repeat products									
NF33 AN3332	Work-in-progress on cultivated biological resources yielding once-only products									
NF34	Acquisitions less disposals of non-produced natural resources	- 6	0	2	3	1	0			0
NF35	Depletion (-)	- 12		- 18	0		- 30			- 30
D9r	Capital transfers, receivable									
D9p	Capital transfers, payable									
B9	*Net lending (+) / net borrowing (–)*	- 80	- 3	- 77	174	- 4	10	- 10		0

Materials and supplies

11.136 ***Materials and supplies (AN121) consist of all products that a producer holds in inventory with the intention of using them as intermediate inputs into own production and not to resell them.*** Not all

necessarily get used in this way, however, as some may be lost as a result of physical deterioration, or recurrent accidental damage or pilfering. Such losses of materials and supplies are recorded and valued in the same way as materials and supplies actually withdrawn to be used up in production.

11.137 Enterprises may hold a variety of quite different kinds of goods under the heading of materials and supplies, the most common types being fuels, industrial raw materials, agricultural materials, semi-processed goods, components for assembly, packaging materials, foodstuffs, office supplies, etc. Every enterprise, including non-market producers owned by government units, may be expected to hold some inventories of materials and supplies, if only inventories of office supplies.

11.138 Materials and supplies do not include works of art or stocks of precious metals or stones acquired by enterprises as valuables. However, there are some producers that do use gold, diamonds, etc. as intermediate inputs into the production of other goods or services, for example, manufacturers of jewellery or dentists. Stocks of gold, diamonds, etc., intended for use in production are recorded under materials and supplies.

Work-in-progress (excluding natural resources)

11.139 ***Work-in-progress (excluding natural resources) (AN122) consists of output that is not yet sufficiently processed to be in a state in which it is normally supplied to other institutional units. Work-in-progress related to biological resources is excluded, and grouped together with other natural resources.*** Work-in-progress occurs in all industries, but is especially important in those in which some time is needed to produce a unit of finished output, for example, in industries producing complex fixed assets such as ships, dwellings, software or films. Work-in-progress can therefore take a wide variety of different forms ranging from partially completed buildings and structures and machinery and equipment to partially completed film productions or computer programs. Although work-in-progress is output that has not reached the state in which it is normally supplied to others, its ownership may nevertheless be transferable, if necessary. For example, the ownership of a partially completed asset may be transferred to the ultimate owner, or it may be sold under exceptional circumstances such as the liquidation of the enterprise.

11.140 Work-in-progress must be recorded for any output that is not complete at the end of the accounting period. This is a particular problem for output taking a long time to complete, such as construction. The shorter the accounting period, the more important work-in-progress is likely to be relatively to finished output. In particular, it is likely to be more significant for quarterly accounts than annual accounts. Incomplete work is recorded as work-in-progress for partially completed projects for which the ultimate owner is deemed to have taken ownership, either because the production is for own use or as evidenced by the existence of a contract of sale or purchase.

11.141 Reductions in work-in-progress take place when the production process is completed. At that point, all work-in-progress is reclassified as a finished product. This reclassification appears in the other changes in the volume of assets and liabilities account.

11.142 If prices and costs have risen, work-in-progress carried forward from previous periods must be revalued using the prices and costs of the period in which the production is finished.

11.143 Current losses from work-in-progress resulting from physical deterioration or recurrent accidental damage or pilfering should be deducted from the additions to work-in-progress accruing as a result of the production carried out in the same period.

11.144 Work-in-progress is subdivided between work-in-progress on cultivated biological resources, as discussed under natural resources, and work-in-progress (excluding natural resources).

Finished goods

11.145 ***Finished goods (AN123) consist of goods produced as outputs that their producer does not intend to process further before supplying them to other institutional units.*** A good is finished when its producer has completed his intended production process, even though it may subsequently be used as an intermediate input into other processes of production. Thus, inventories of coal produced by a mining enterprise are classified as finished products, although inventories of coal held by a power station are classified under materials and

supplies. Inventories of batteries produced by a manufacturer of batteries are finished goods, although inventories of the same batteries held by manufacturers of vehicles and aircraft are classified under materials and supplies.

11.146 Inventories of finished goods may be held only by the enterprises that produce them. Finished goods entering inventories are valued at the basic prices of those goods at the times the entries take place; finished goods withdrawn from inventories are valued at the basic prices at the time when their withdrawals take place. Current losses of finished goods resulting from physical deterioration or recurrent accidental damage or pilfering should be valued at the prices at the time when the losses occur.

Military inventories

11.147 ***Military inventories (AN124) are defined as inventories consisting of single-use items such as ammunition, missiles, rockets, bombs, etc., delivered by weapons or weapons systems.*** As noted above in the discussion of weapons systems as fixed capital, most single-use items are treated as inventories but some types of missiles with highly destructive capability may be treated as fixed capital because of their ability to provide an ongoing deterrence service against aggressors.

Goods for resale

11.148 ***Goods for resale (AN125) are goods acquired by enterprises such as wholesalers or retailers for the purpose of reselling or transferring them to other units without any further processing.*** Goods for resale are not processed further by the enterprises that purchase them, except for presenting them for resale in ways that are attractive to their customers. Thus, goods for resale may be transported, stored, graded, sorted, washed, packaged, etc. by their owners but are not otherwise transformed.

11.149 Goods for resale entering the inventories of the enterprises are valued at their actual or estimated purchasers' prices. These prices include any additional transportation charges paid to enterprises other than the suppliers of the goods, but not the costs of any transport services produced on own account by the enterprise taking delivery. In principle, goods acquired by barter are valued at their estimated purchasers' prices at the time of acquisition. However, because there are no taxes or margins on bartered goods, the purchaser's price is the same as the basic price.

11.150 Goods for resale withdrawn from inventories are valued at the purchasers' prices at which they can be replaced at the time they are withdrawn as distinct from the purchasers' prices that may have been paid for them when they were acquired. Reductions in inventories are valued in this way whether the goods withdrawn are sold at a profit or at a loss, or even not sold at all as a result of physical deterioration or recurrent accidental damage or pilfering.

11.151 By convention, goods acquired by government for distribution as social transfers in kind but that have not yet been so delivered are also included in goods for resale.

3. Acquisitions less disposals of valuables

The asset boundary

11.152 Valuables include precious metals and stones, antiques and other art objects and other valuables. However, not all items that may be described by one of these titles should necessarily be included as a valuable in the balance sheet of the owner. The intent of the heading is to capture those items that are often regarded as alternative forms of investment. At various times, investors may choose to buy gold rather than a financial asset and pension funds have been known to buy "old master" paintings when the prices of financial assets were behaving in a volatile manner. Individuals (households in SNA terminology) may also choose to acquire some of these items knowing that they may be sold if there is a need to raise funds.

Valuation

11.153 Costs of ownership transfer, such as valuers' and auctioneers' margins, are often incurred when valuables are exchanged. As with other non-financial assets, these costs are treated as gross capital formation and included in the value of the items when recorded in the balance sheet.

Transactions in valuables

11.154 A possible categorization of valuables is: precious metals and stones; antiques and other art objects; and other valuables. This list should be regarded as indicative and supplementary rather than a standard breakdown. The context of each category is described to assist in identifying and valuing valuables.

Precious metals and stones

11.155 Precious metals and stones are treated as valuables when they are not held by enterprises for sale or use as inputs into processes of production nor are held as monetary gold and are not held as a financial asset in the form of unallocated metal accounts.

Antiques and other art objects

11.156 Paintings, sculptures, etc., recognized as works of art and antiques are treated as valuables when they are not held by enterprises for sale. In principle, museum exhibits are included under valuables.

Other valuables

11.157 Other valuables not elsewhere classified include such items as collections of stamps, coins, china, books etc. that have a recognized market value, fine jewellery fashioned out of precious stones, and metals of significant and realizable value. It may also include non-fungible tokens (NFTs) that only allow for personal use of another product or asset (usually a digital valuable). Some of these NFTs may initially be recorded as final consumption expenditure, but over time gain more features of a valuable. NFTs that grant limited ownership rights are recorded as part of contracts, leases and licenses; see paragraph 11.170.

C. Acquisitions less disposals of non-produced non-financial assets (excluding natural resources)

11.158 Excluding non-produced natural resources (see section D), there are three distinct types of non-produced non-financial assets in the integrated framework of the SNA: contracts, leases and licences, crypto assets without a corresponding liability designed to act as a medium of exchange, and purchased goodwill and marketing assets. These three types of assets have little in common except that they are all non-produced and non-financial, and that they are not natural resources. A separate section discusses each of the three.

11.159 Table 11.4 shows table 11.1 expanded to show the standard detail of non-produced non-financial assets. Each of the categories is discussed under the appropriate section.

Table 11.4: The capital account - non-produced non-financial assets

Changes in assets

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
NF1	Acquisitions less disposals of produced non-financial assets (excluding natural resources)	141	- 4	11	30	2	180			180
NF11	Gross fixed capital formation	257	8	35	44	5	349			349
NF12	Depreciation (-)	- 142	- 12	- 27	- 20	- 3	- 204			- 204
NF13	Changes in inventories	24	0	0	1	0	25			25
NF14	Acquisitions less disposals of valuables	2	0	3	5	0	10			10
NF2	Acquisitions less disposals of non-produced non-financial assets (excluding natural resources)	- 1	0	0	1	0	0	0		0
NF2 AN21	Contracts, leases and licenses									
NF2 AN211	Marketable operating leases									
NF2 AN212	Permits to undertake specific activities									
NF2 AN213	Entitlements to future goods and services on an exclusive basis									
NF2 AN214	Non-fungible tokens									
NF2 AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange									
NF2 AN23	Purchased goodwill and marketing assets									
NF3	Acquisitions less disposals of natural resources	- 8	0	- 16	5	1	- 18			- 18
NF31	Gross fixed capital formation	23	0	0	4	0	27			27
NF32	Depreciation (-)	- 15	0	0	- 3	0	- 18			- 18
NF33	Changes in inventories	2	0	0	1	0	3			3
NF34	Acquisitions less disposals of non-produced natural resources	- 6	0	2	3	1	0			0
NF34 AN31	Land									
NF34 AN32	Mineral and energy resources									
NF34 AN321	Non-renewable mineral and energy resources									
NF34 AN322	Renewable energy resources									
NF34 AN3322	Non-cultivated biological resources yielding once-only products									
NF34 AN34	Water resources									
NF34 AN39	Other natural resources									
NF34 AN391	Radio spectra									
NF34 AN392	Permits to use natural resources									
NF34 AN393	Other									
NF35	Depletion (-)	- 12		- 18	0		- 30			- 30
D9r	Capital transfers, receivable									
D9p	Capital transfers, payable									

1. Contracts, leases and licences (excluding natural resources)

The asset boundary

11.160 ***Contracts, leases and licences (AN21) are non-produced assets where one party to a contract, lease or license is able legally and practically to realize the price difference between the market price for the use of an asset or the provision of a service, and the price specified in the contract, lease or license. Non-fungible tokens that grant limited ownership rights are also included.***

The condition of the party to the contract being able to realize the price difference presupposes that a market for the contract exists. It is recommended that in practice contracts, leases and licences should only be recorded in the accounts when the holder does actually exercise the right to realize the price difference.

11.161 Chapter 27 on Contracts, leases, licenses and permits discusses the whole question of the treatment of leases within the integrated framework of national accounts and should be consulted if there is doubt about whether a contract, lease or licence should be treated as an asset.

11.162 The costs of ownership transfer on the acquisition and disposal of contracts, leases and licences should be shown separately as gross capital formation.

Types of assets included in contracts, leases and licences

11.163 There are four classes of contracts, leases and licences considered to be assets in the integrated framework of the SNA: marketable operating leases, permits to undertake specific activities, entitlement to future goods and services on an exclusive basis, and non-fungible tokens.

Marketable operating leases

11.164 ***Marketable operating leases (AN211) are third-party property rights relating to fixed assets.*** An example is where a tenant of a building has a fixed rental but the building could fetch a higher rental in the absence of the lease. If, in these circumstances, the tenant is able both legally and practically to sublet the building, then he has an asset of the type of a marketable operating lease.

Permits to undertake specific activities

11.165 ***Permit to undertake a specific activity (AN212) are permits***

- ***a. which are limited in number and so allow the holders to earn monopoly profits,***
- ***b. where the monopoly profits do not come from the use of an asset belonging to the permit-issuer,***
- ***c. which a permit holder is able both legally and practically to sell the permit to a third party.***

Such permits are issued mainly by government but may also be issued by other units.

11.166 When governments restrict the number of cars entitled to operate as taxis or limit the number of casinos permitted by issuing licences, they are in effect creating monopoly profits for the approved operators and recovering some of the profits as the fee. The incentive to acquire such a licence is that the licensee believes that he will thereby acquire the right to make monopoly profits at least equal to the amount that was paid for the licence. The type of asset is described as a permit to undertake a specific activity. The value of the asset is determined by the future stream of monopoly profits.

11.167 It is less common for units other than government to be able to limit the participation in a given activity. One instance may be where the owner of property limits the numbers of units allowed to operate on the property, for example a hotel with a policy of only allowing one taxi firm to pick up guests. In this sort of case, the permits are treated as giving rise to payments for services. There is no reason in principle why such permits could not be treated as assets, certainly if they are marketable though this may not be a common situation.

11.168 Chapter 27 contains a more elaborated discussion of the various types of permits and how they should be

treated in the integrated framework of national accounts.

Entitlement to future goods and services on an exclusive basis

11.169 ***Entitlement to future goods and services on an exclusive basis (AN213) are arrangements where one party which has contracted to purchase goods or services at a fixed price at a time in the future is able to transfer the obligation of the second party to the contract to a third party***. Examples are footballers' contracts, a publisher's exclusive right to publish new works by a named author or issue recordings by named musicians.

Non-fungible tokens

11.170 ***Non-fungible tokens (AN214) relate to digital records hosted on a blockchain that are associated with a digital or physical asset or product but that are distinct from that asset or product.*** In some cases, these non-fungible tokens grant limited commercial rights from which the owner can derive future economic benefits (e.g., some form of royalties). These tokens should be recorded as non-produced non-financial assets. Acquisitions of these assets should be valued at their exchange values.

2. Crypto assets without a corresponding liability designed to act as a medium of exchange

11.171 ***Crypto assets without a corresponding liability designed to act as a medium of exchange (AN22) are crypto assets for which there is no claim on the issuer. They may be designed to act as a general medium of exchange, or designed to act as medium of exchange within a platform only.*** Different from similar assets issued by, for example, a central bank, crypto assets without a corresponding liability are recorded as non-produced non-financial assets, and not as financial assets, mainly because a counterpart liability cannot be established.

11.172 The recording as non-produced non-financial assets means that purchases of goods or services using these assets are considered to be barter transactions. The valuation of these transactions, similar to direct acquisitions or disposals of crypto assets, can be determined by the observed market price of the relevant crypto assets, or the exchange price of the relevant goods and services, at the date of exchange.

11.173 Crypto assets more generally are a relatively new phenomenon, certainly at the time of writing these standards. As a consequence, the role of crypto assets without a counterpart liability designed to act as a medium of exchange may change in the future, and such crypto assets may qualify as money, to be recorded as financial assets. Important conditions for such a classification are that these assets are (i) authorised by government, (ii) generally accepted as a means of payments, including paying taxes with such assets; (iii) serving as a unit of account; and (iv) widely used as a medium of exchange. In respect of these future developments, the classification of crypto assets without a counterpart liability designed to act as a medium of exchange has been put on the research agenda (see annex 5).

3. Purchased goodwill and marketing assets

11.174 Potential purchasers of an enterprise are often prepared to pay a premium above the net value of its individually identified and valued assets and liabilities. This excess is described as "goodwill" and reflects the value of corporate structures and the value to the business of an assembled workforce and management, corporate culture, distribution networks and customer base. It may not have value in isolation from other assets, but it enhances the value of those other assets. Looked at another way, it is the addition to the value of individual assets because they are used in combination with each other.

11.175 Purchased goodwill cannot be separately identified and sold to another party. The value has to be derived by deducting from the sale value of the corporation the value of assets and liabilities classified elsewhere within the asset boundary of the integrated framework of the SNA. (In practice, since it is estimated as a residual, an estimate of goodwill will also reflect errors and omissions in the valuation of other assets and liabilities.)

11.176 As well as residual errors, the value of purchased goodwill may include the value to the corporation of items known as marketing assets. ***Marketing assets consist of items such as brand names, mastheads, trademarks, logos and domain names***. A brand can be interpreted as far more than just a corporate name or logo. It is the overall impression a customer or potential customer gains from their experience with the company and its products. Interpreted in that wider sense it can also be seen to encompass some of the characteristics of goodwill such as customer loyalty.

11.177 The value of purchased goodwill and marketing assets is defined as the difference between the value paid for an enterprise as a going concern and the sum of its assets less the sum of its liabilities, each item of which has been separately identified and valued. Although goodwill is likely to be present in most corporations, for reasons of reliability of measurement it is only recorded in the integrated framework of national accounts when its value is evidenced by a market transaction, usually the sale of the whole corporation. In cases where identified marketing assets are sold or leased individually and separately from the whole corporation, their sale or lease should also be recorded under this item.

D. Acquisitions less disposals of natural resources

11.178 Natural capital, as defined in chapter 35 on Measuring the sustainability of well-being, consists of two classes of assets: natural resources and ecosystem assets. The former are recognised in the integrated framework of national accounts, and the latter are not.

11.179 ***Natural resources (AN3) are assets that naturally occur, such as land, mineral and energy resources, water resources, and animal, tree, crop and plant resources, that have an economic value and over which ownership may be enforced and transferred. Environmental assets over which ownership rights have not, or cannot, be enforced, such as high seas beyond national jurisdiction and most parts of the atmosphere, are excluded.*** (See below for a more detailed discussion.) In monetary terms, the environmental asset boundary of the *SEEA Central Framework* and natural resources asset boundary of the integrated framework of national accounts are the same, with the exception that the value of radio spectra and renewable energy resources are excluded from the *SEEA Central Framework*. On the other hand, in physical terms, the asset boundary of the *SEEA Central Framework* is broader and also includes all non-produced natural resources and areas of land of an economic territory that may provide resources and space for use in economic activity. Thus, the scope in physical terms is not limited to those assets with economic value.

11.180 ***Ecosystem assets (AN4X) are contiguous spaces of a specific ecosystem type characterized by a distinct set of biotic and abiotic components and their interactions. Ecosystem assets are not explicitly recognised as economic assets in the integrated framework of national accounts.*** However, part of the value of some ecosystem assets will be implicitly included in the value of some natural resources, particularly agricultural land and forest land, since the economic value of the provisioning services and other ecosystem services supplied by these ecosystem assets will also be reflected in the values of the natural resources. The recording of data about ecosystem assets and the services they apply is at the heart of *SEEA Ecosystem Accounting*.

11.181 Environmental assets, as defined in the *SEEA Central Framework,* consist of both the broader concept of natural resources (i.e., including cultivated biological resources) as well as ecosystem assets. For more information on environmental assets and natural capital, and accounting for environmental sustainability more generally, see chapter 35 on Measuring the sustainability of well-being and the two *SEEA* standards.

11.182 In the integrated framework of national accounts, natural resources are broken down into five asset categories: (i) land; (ii) mineral and energy resources; (iii) biological resources; (iv) water resources; and (v) other natural resources. In the discussion below, a distinction is made between biological resources and the other types of natural resources. The main reason for this is that biological resources are a mixture of cultivated and non-cultivated, i.e., produced and non-produced assets, while the other categories exclusively consist of non-produced non-financial assets.

1. Land, mineral and energy resources, water resources and other natural resources

The asset boundary

11.183 As noted before, not all environmental assets qualify as economic assets. It is useful, therefore, to delineate those naturally occurring resources that fall within the asset boundary of the integrated framework of national accounts from those that do not.

11.184 In the first place, it must be noted that the accounts and balance sheets of the integrated framework of national accounts are compiled for institutional units or groups of units and can only refer to the values of assets that belong to the units in question. Only those naturally occurring resources over which ownership rights have been established and are effectively enforced can therefore qualify as economic assets and be recorded in balance sheets. They do not necessarily have to be owned by individual units, and may be owned collectively by groups of units or by governments on behalf of entire communities. Certain naturally occurring resources, however, may be such that it is not feasible to establish ownership over them: for example, air, or the oceans. In addition, there may be others that cannot be treated as economic assets because they do not actually belong to any particular units. These include not only those whose existence is unknown but also those that may be known to exist but remain so remote or inaccessible that, in practice, they are not under the effective control of any units.

11.185 Secondly, in order to comply with the general definition of an economic asset, environmental assets must not only be owned but must also be capable of bringing future economic benefits to their owners, given the technology, scientific knowledge, economic infrastructure, available resources and set of relative prices prevailing on the dates to which the balance sheet relates or expected to do so in the near future. Thus, known deposits of minerals that are not commercially exploitable in the foreseeable future are not included in the balance sheets of the integrated framework of the SNA, even though they may possibly become commercially exploitable at a later date as a result of major, unforeseen advances in technology or major changes in relative prices.

11.186 In the case of mineral and energy resources, *SEEA Central Framework* distinguishes three classes based on the *UNFC*: class A: commercially recoverable resources; class B: potentially commercially recoverable resources; and class C: non-commercial and other known deposits. The measurement of monetary estimates is typically restricted to the first class, which in practice could be approximated by those resources for which permissions to exploit have been granted, and/or those for which the existence is explicitly recognised by (past) monetary transactions. Potential mineral and energy resources where it is not foreseen that they will be exploited in the near future are thus explicitly excluded.

Ownership of assets

11.187 All owners and purchasers of land and immovable natural resources within the economic territory are deemed to have a centre of economic interest in the economy. If an owner or purchaser would not otherwise qualify as a resident unit, a notional resident unit is created for this purpose. The notional resident unit is deemed to purchase the natural resource while the non-resident is deemed to purchase the equity of the notional unit and thus acquires a financial instead of a non-financial asset. Thus, all purchases and sales of land and immovable natural resources normally take place between resident units. The one exception is when the boundaries of the economic territory itself are changed, for example, when a foreign government, or international organization, purchases or sells land that is added to, or taken away from, the enclave in which its embassy or offices are located.

11.188 Moreover, as purchases and sales of land and other immovable natural resources are recorded excluding costs of ownership transfer for both buyers and sellers, the total value of the purchases and sales of these assets must be equal to each other at the level of the total economy, although not at the level of individual sectors or subsectors.

11.189 Similarly, it is assumed that extraction of mineral and energy resources can only be undertaken by resident institutional units. As soon as an enterprise starts to prepare to establish for extraction, for example by obtaining the requisite licences, it is assumed to become resident at that point.

11.190 In the case of mineral and energy resources, a government is often the legal owner of the resources. Once a

decision is taken to extract the resources, a license is given to a user/extractor to exploit the resources. In return for the license, the extractor typically pays an annual rent to the government. Any payments made by the user/extractor of a non-produced natural resource to the owner of the natural resource, which are linked to the use/extraction of that resource, in particular to the quantity and/or value of that resource, should be recorded as rent. These would include, for example, royalties, sur-taxes, and permits. However, payments that are paid by the user/extractor on the same basis as other corporations who are not users/extractors of non-produced natural resources (e.g., standard rate corporation taxes, dividends, payments for services) should not be recorded as rent.

11.191 The full resource rent can be estimated using the residual value method, by deducting from output all costs related to the extractions of the resources, including capital services related to the capital used in production. (For more details, see the annex to chapter 4 on Flows, stocks and accounting rules.) The government often does not appropriate the full resource rent which can be derived from the exploitation of mineral and energy resources. If this is the case, the asset should be allocated to government and the extractor in line with the estimated appropriation of future resource rents. The coming into existence of the relevant resources is recorded as an other change in the volume of assets and liabilities, and is therefore not recorded on the capital account.

Valuation

11.192 Since land, mineral and energy resources, water resources and the like are non-produced, the costs of ownership transfer, which are part of fixed capital formation, must be shown separately in the capital account and not as part of the value of the transaction in the non-produced asset.

Transactions in natural resources

11.193 Transactions in natural resources are shown as acquisitions less disposals of the asset in question, according to the classification given in table 11.4.

Land

11.194 ***Land (AN31) consists of the ground, including the soil covering and any associated surface waters, over which ownership rights are enforced and from which economic benefits can be derived by their owners by holding or using them.*** The value of land excludes any buildings or other structures situated on it or running through it; cultivated crops, trees and animals; mineral and energy resources; non-cultivated biological resources and water resources below the ground. The associated surface water includes any inland waters (reservoirs, lakes, rivers, etc.) over which ownership rights can be exercised and that can, therefore, be the subject of transactions between institutional units. However, water bodies from which water is regularly extracted, against payment, for use in production (including for irrigation) are included not in water associated with land but in water resources.

11.195 As explained above, land improvements and the costs of ownership transfer on land are treated as fixed assets and shown separately. Land improvements are classified as part of acquisitions less disposals of produced non-financial assets (excluding natural resources), while the costs of ownership transfer are classified as part of acquisitions less disposals of natural resources. In consequence of this separate recording as fixed assets, acquisitions and disposals of land are recorded at the same value for both the purchaser and the seller. Since both parties to the transaction must be residents, it follows that, for the economy as a whole, the aggregate value of total purchases of land must equal the aggregate value of total sales, although this is not generally true at lower levels of aggregation, such as individual sectors or subsectors. The value of acquisitions less disposals of land is thus zero for the economy as a whole (excluding transactions that change the boundary of the economic territory itself, as noted in paragraph 11.187.

11.196 Buildings, or other structures, are often purchased or sold together with the land on which they are situated, without separate valuations being placed on the structures and the land. Even if it is not feasible to obtain separate valuations, as may be the case for existing structures, it may be possible to determine which out of

the land or the structure accounts for most of their combined value and to classify the transaction as the purchase of land or of a structure depending upon which has the greater value. If it is not possible to determine whether the land or the structure is the more valuable, by convention, the transaction should be classified as the purchase of a structure, that is, as gross fixed capital formation.

11.197 Similar considerations apply in the case of mineral and energy resources and biological resources. The value of land may be higher due to the availability of mineral and energy resources, or the possibility to exploit renewable energy by having permission to put, for example, wind turbines or fields of solar panels on the land. In addition to the relevant structures, the value will also be affected by the present value of future resource rents derived from exploiting these mineral and energy resources. In the case of biological resources, it may also be difficult to delineate the value of land from the value of plantations yielding repeat products as well as from the value of single-use plants and trees, including the present value of future economic benefits related to provisioning services (e.g., resource rents related to the exploitation of forest land for timber production). In all these cases, the transaction should preferably be recorded in line with the asset classification. As this may show to be difficult to apply in practice, the transaction is to be recorded as a purchase of land or the purchase of a natural resource depending upon which has the greater value. If it is not possible to determine whether the land or the natural resource is the more valuable, by convention, the transaction should be classified as (the purchase of) land. Agricultural land and forest land, excluding the cultivated crops, trees and animals on it, are always classified as part of land (i.e., non-produced natural resources), even though part of the value may relate to provisioning type of services, which may take place under the direct control, responsibility and management of institutional units. In all cases, potential double-counting, under land as well as the relevant natural resource, should be avoided.

11.198 The integrated framework of national accounts does not specify a disaggregation of land but it is recommended that if a disaggregation is required, it should be according to that used in the *SEEA*.

Mineral and energy resources

11.199 The first group of mineral and energy resources consists of ***non-renewable mineral and energy reserves (AN321) which consist of known deposits of non-renewable oil resources, natural gas resources, coal and peat resources, non-metallic minerals and metallic minerals located on or below the Earth's surface that are economically exploitable, given current technology and relative prices.*** Ownership rights to the mineral and energy resources are usually separable from those to the land itself. The transactions recorded in the capital account refer only to those mineral and energy resources over which ownership rights have been established. In most cases, mineral and energy resources may be owned separately from land below which they are located, but in other cases the law may stipulate that the ownership of the mineral and energy resources is inseparably linked to that of the land.

11.200 The second group of mineral and energy resources relates to ***renewable energy resources (AN322) consisting of energy resources which comprise the cumulative quantities of kinetic, radiative and thermal energy recoverable from moving water (hydro and ocean energy), moving air (wind energy), hot underground and surface rock and water (geothermal resources) and incident solar radiation (solar resources).*** Although these resources as such are generally not scarce, the exploitation of these resources may be restricted to certain economic agents, for example by needing permissions to put wind turbines on land, or having ownership of particular pieces of land which are highly favourable for exploiting renewable resources.

11.201 The transactions in mineral and energy resources recorded in the capital account refer to acquisitions or disposals of mineral and energy resources in which the ownership of such assets passes from one institutional unit to another. In the case of the establishment of a license agreement between a legal owner (usually government) and a user/extractor to exploit natural resources, the user/extractor may appropriate part of the value of the assets; see paragraph 11.191. This change in ownership is to be recorded as an other change in the volume of assets. Reductions in the value of known reserves of mineral and energy resources resulting from their depletion as a result of extracting the assets for purposes of production are also recorded in the capital account, in line with the allocation of the relevant assets to the original owner and the extractor (see section E). Depletion does not apply to renewable energy resources.

11.202 Again if a disaggregation is required for certain types of analysis, it is recommended to distinguish the following categories of non-renewable mineral and energy resources: (i) coal and lignite resources; (ii) oil

and natural gas resources; (iii) mineral resources; and (iv) other non-renewable mineral and energy resources. If considered relevant and feasible, oil and natural gas could be separately distinguished as well. For renewable energy resources, the following breakdown is recommended: (i) wind energy resources; (ii) solar energy resources; (iii) water energy resources; (iv) geothermal energy resources; and (v) other renewable energy resources.

Water resources

11.203 ***Water resources (AN34) consist of surface and groundwater resources used for extraction to the extent that their scarcity leads to the enforcement of ownership and/or use rights, market valuation and some measure of economic control.*** If it is not possible to separate the value of surface water from the associated land, the whole should be allocated to the category representing the greater part of the total value.

Other natural resources

11.204 The category other natural resources currently includes radio spectra and permits to use natural resources; for more details, see chapter 27. Given the increasing move to carry out environmental policy by means of market instruments, it may be that other natural resources will come to be recognized as economic assets. If so, this is the category to which they should be allocated.

Costs of ownership transfer on non-produced natural resources

11.205 The costs of ownership transfer on non-produced natural resources represent produced assets but their value cannot be integrated with the value of another produced asset. They must therefore be shown as a separate category of gross fixed capital formation. Costs of ownership transfer are defined in paragraphs 11.56 to 11.61.

2. Biological resources

The asset boundary

11.206 Naturally occurring assets in the form of biota (trees, vegetation, animals, birds, fish, etc.) are renewable. The growth and regeneration of trees, crops or other vegetation or the rearing of animals, birds, fish, etc., may take place under the direct control, responsibility and management of institutional units. In this situation, the assets are cultivated, and the activity is treated as falling within the production boundary of the integrated framework of national accounts. The growth of animals, birds, fish, etc., living in the wild, or growth of non-cultivated vegetation in forests, is not an economic process of production so that the resulting assets cannot be classed as produced assets. Nevertheless, when these non-cultivated biological resources are actually owned by institutional units and are a source of future economic benefits to their owners, they constitute economic assets. When wild animals, birds, fish, etc. live in locations such that no institutional unit is able to exercise effective ownership rights over them they fall outside the asset boundary. Similarly, the forests or other vegetation growing in such regions are not counted as economic assets. On the other hand, fish stocks in the high seas which are subject to international agreement on how much may be caught by individual countries may be counted as falling within the asset boundary.

11.207 In practice, it may be difficult to make a clear distinction between cultivated and non-cultivated biological resources. Here, the treatment of biological resources yielding repeat products (breeding stocks, dairy cattle, fruit trees, etc.) is more straightforward than the treatment of certain biological resources yielding once-only products. The former resources generally take place under the direct control, responsibility and management of institutional units, and are treated as assets, apart from some rather insignificant resources, such as wild shrubs for berry picking. Some biological resources yielding once-only products are also easy to classify as being under the direct control, responsibility and management of institutional units, the most obvious examples being animals for slaughter and plants and crops which are produced on farms (including fish farms).

11.208 The distinction between cultivated and non-cultivated biological resources becomes more complicated for biological resources yielding once-only products that are often not directly owned by individual institutional units. In these cases, it is recommended to distinguish between resources where the control, responsibility and management does not go beyond the establishment of quota regimes (e.g., migrating wild animals and fish) versus resources where one can observe a continuum from intensive to extensive forms of control, responsibility and management (e.g., the growth of trees for timber production). In the latter case, ownership rights are usually in place. The relevant assets may not be owned by individual economic agents, but in those cases a government typically exerts collective ownership. It is recommended to treat these resources as cultivated assets, with all growth of trees which in the future are intended to be used for the purpose of producing timber considered as being established under some form of human involvement, instead of applying a discretionary choice between either managed and controlled or not managed and controlled by economic agents. In the former case of assets where the human involvement does not go beyond the establishment of quota regimes, the resources are typically treated as non-cultivated assets.

Ownership of assets

11.209 Ownership of assets is generally clear, with the exception of biological resources yielding once-only products that are often not directly owned by individual institutional units. In these cases, it is recommended to allocate the assets to the legal owner and the exploiter of the resources in line with the appropriation of future resource rents, similar to the recording of non-renewable mineral and energy resources.

Valuation

11.210 The valuation of transactions in biological resources can generally be based on the actual exchange values. For biological resources yielding once-only products that are often not directly owned by individual institutional units, transactions usually do not take place, unless rights to exploit the resources are transacted. Here, one can distinguish three cases: (i) the owner may permit the resource to be used to extinction; (ii) the owner may allow the resource to be used for an extended period of time in such a way that in effect the user controls the use of the resource during this time with little if any intervention from the legal owner; and (iii) the owner can extend or withhold permission to continued use of the asset from one year to the next. When the resource access rights are freely traded, it is possible to estimate the value of the relevant biological resource from the observed market prices of the rights. The economic logic parallels the residual value method, since it is expected that, in a free market, the value of the rights should be equivalent to the future economic benefits from the biological resource (after deducting all costs, including the capital services related to capital used in production). Moreover, if the access rights provide very long term or indefinite access to the assets, the observed market value of these rights may provide a direct estimate of the total value of the underlying asset.

11.211 However, in practice, in many cases governments may give the access rights to extractors for free or do so at a price that is less than the true economic value. Further, trading of the rights may be restricted or prohibited. In these cases, there is no directly observable market valuation, and the present value of future resource rents should be used. The establishment of license arrangements or quota regimes, including the related appropriation of future resource rents, would be recorded as other changes in volume of assets, unless the relevant assets are actually transacted. In the latter case of the assets being transacted, the price paid may also be well below the present value of future resource rents, because the rights are not traded in a free market, while trading is restricted or prohibited. In this case, the difference is to be recorded as a capital transfer from government to the one purchasing the resources. For more details, see chapter 27 on Contracts, leases, licenses and permits.

Cultivated biological resources yielding repeat products

11.212 Biological resources yielding repeat products are typically cultivated resources and cover both animal resources and tree, crop and plant resources yielding repeat products, whose natural growth and regeneration are under the direct control, responsibility and management of institutional units. One may assume that non-

cultivated biological resources yielding repeat products are usually immaterial.

11.213 In general, when the production of fixed assets takes a long time to complete, those assets whose production is not yet completed at the end of the accounting period are recorded as work-in-progress. This also holds for assets produced on own account.

Animal resources yielding repeat products

11.214 ***Animal resources yielding repeat products (AN3311) cover animal resources yielding repeat products whose natural growth and regeneration are under the direct control, responsibility and management of institutional units. They include breeding stocks, dairy cattle, draft animals, sheep or other animals used for wool production and animals used for transportation, racing or entertainment. Animals raised for slaughter are not included.*** Immature cultivated assets yielding repeat products are recorded as work-in-progress.

11.215 This heading may also include aquatic resources yielding repeat products, consisting of aquatic resources maintained for controlled reproduction. In all but exceptional cases, though, these will be small and may be ignored unless of significant importance.

11.216 Gross fixed capital formation in livestock that are cultivated for the products they yield year after year (dairy cattle, draught animals, etc.) is measured by the value of acquisitions less disposals. It is therefore equal to the total value of all mature animals acquired by users of the livestock, including all mature animals produced on own account, less the value of their disposals. Disposals consist of animals sold or otherwise disposed of, including those sold for slaughter, plus those animals slaughtered by their owners. Exceptional losses of animals due to major outbreaks of disease, contamination, drought, famine, or other natural disasters are recorded in the other changes in the volume of assets and liabilities account and not as disposals. Incidental losses of animals due to occasional deaths from natural causes form part of depreciation. Depreciation of an individual animal is measured by the decline in its value as it gets older.

Tree, crop and plant resources yielding repeat products

11.217 ***Tree, crop and plant resources yielding repeat products (AN3312) cover tree, crop and plant resources yielding repeat products whose natural growth and regeneration are under the direct control, responsibility and management of institutional units. They include trees (including vines and shrubs) cultivated for fruits and nuts, for sap and resin and for bark and leaf products. Trees grown for timber that yield a finished product once only, just as cereals or vegetables that produce only a single crop, are excluded.***

11.218 Gross fixed capital formation in plantations, orchards, etc., consists of the value of the acquisitions less disposals of mature trees, shrubs, etc. Immature products are recorded as work-in-progress, the value of which may be approximated, if necessary, by the value of costs incurred in their production during the period: for example, the costs of preparing the ground, planting, staking, protection from weather or disease, pruning, training, etc. Once the trees reach maturity and starts to yield a product, they are transferred from work-in-progress to gross fixed capital formation. Disposals consist of trees, shrubs, etc., sold or otherwise transferred to other units plus those cut down before the end of their service lives. All agricultural output is at the mercy of the weather. Expected output must take account of normal variations in climatic conditions and exceptional losses should be confined to those outside recent past experience. Disposals do not include exceptional losses of trees due to drought or other natural disasters such as gales, hurricanes or forest fires, these being recorded in the other changes in the volume of assets and liabilities account. Depreciation of a tree, crop or plant resource yielding repeat products is measured by the decline in its value as it gets older, and fewer products can be produced from it over its remaining life.

Biological resources yielding once-only products

11.219 Leaving apart the farming of single-use plants and livestock that produce an output once only, cultivated biological resources yielding once-only products mainly consist of non-migrating resources, the most

prominent example being the growth of trees for timber production. As noted before, in the case of timber resources over which (collective) ownership can be enforced, all growth of trees intended to be used for the purpose of producing timber is considered as being under some degree of human management and control, and therefore treated as cultivated biological resources. Possible economic benefits derived from the growth of trees not intended for future timber production are not given rise to the recognition of assets, in this case work-in-progress.

11.220 Two types of assets need to be considered and estimated for cultivated biological resources yielding once-only products: (i) the underlying asset, i.e., the forest land, and (ii) the work-in-progress representing the growth of trees. Exchange prices for forest land are usually not available, and need to be approximated using the present value of future economic benefits, after deduction of the value of the work-in-progress (see chapter 14 on Balance sheet). Any decrease in the volume of this underlying asset, which is the result of a decrease in the regenerative potential of the forest land, is to be recorded as depletion, while an increase in this regenerative potential should be recorded as negative depletion.

11.221 As forest land is classified as part of land, and work-in-progress is classified under a separate category, cultivated biological resources yielding once-only products will typically be restricted to some marginal cases.

11.222 ***Non-cultivated biological resources yielding once-only products (AN3322) consist of animal resources, and tree, crop and plant resources that yield once-only products over which ownership rights, often collectively by government, are enforced but for which natural growth or regeneration is not under the direct control, responsibility and management of institutional units.*** In practice, these resources may be restricted to migrating biological resources, such as fish, which are subject to some form of quota regime. However, it could also include, for example, resources related to fishing in large lakes, if these activities are regulated in one way or another, and thus provide economic benefits in the future. The value of these resources could be approximated by the present value of the future economic benefits derived from these assets, which would include both the value of the underlying asset (quota) and the relevant stock of animals, birds, fish and plants. Any change in the regenerative potential of the underlying asset is to be recorded as (negative) depletion.

Work-in-progress on cultivated biological resources

11.223 Regarding work-in-progress on cultivated biological resources, it is necessary to distinguish work-in-progress on cultivated biological yielding once-only products (i.e., single-use plants, trees and livestock that produce an output once only (when the plants or trees are cut down or uprooted or the livestock slaughtered)) from the relevant work-in-progress on cultivated biological resources yielding repeat products (i.e., trees (including vines and shrubs) and livestock that are used repeatedly or continuously for more than one year to produce outputs such as fruit, nuts, rubber, milk, wool, power, transportation and entertainment). Both are described below.

Work-in-progress on cultivated biological resources yielding repeat products

11.224 Work-in-progress on cultivated biological resources yielding repeat products consists of output that is not yet sufficiently mature to be in a state in which it is normally supplied to other institutional units, or to be used in production. The growth of repeat yield resources, being cultivated on own account, or under an agreed contract with another unit, is also counted as work-in-progress. Any remaining cultivation of resources with repeat yields should be included in work-in-progress. This may be the case for nurseries and breeders of race horses or other special animals, for example.

Work-in-progress on cultivated biological resources yielding once-only products

11.225 Work-in-progress related to cultivated biological resources yielding once-only products represents the accrual accounting of the growth of single-use animals, crops and plants as well as trees intended for the future production of timber. For the farming of single-use animals, crops and plants which take more time to

mature than the reference period (quarter, year), the method of allocating output over multiple periods in proportion to the costs incurred in each period (see paragraph 11.132) may not be satisfactory. A disproportionate share of the costs may be incurred in sowing a crop with little if any costs being incurred until harvest. Prorating the output to the physical growth of the crop may be considered a possibility but in cases where there is serious risk of climatic damage just before the crop is harvested, this may give over-optimistic indications of probable output. Pragmatic distributions over quarters based on past experience may have to be used, or where multi-cropping is the norm, to allow the whole output of each crop to be counted in the period when it is harvested.

11.226 Storage may also be undertaken as a production activity in the case the price of the good stored, relative to the general level of prices, is expected to increase by a certain amount over a predetermined time. For example, winter wheat may be expected, on the basis of past experience, to fetch a given multiple of its price at harvest. These goods are also classified as work-in-progress. (See paragraphs 11.126 to 11.129 and the annex to chapter 7 on Production account for further details.)

11.227 In the case of trees, a distribution of output over the accounting periods of the growth of the trees in proportion to the costs incurred may also not provide satisfactory results when looking at individual generations of trees, as a disproportionate share of the costs may be incurred in the beginning and the end of the period of growth. However, in case the growth of trees is a more or less continuous process, with a forest consisting of trees in different age categories, an equal distribution of the growth over the life-length of the trees is considered a good approximation. Due to the considerable time it takes before a tree is mature enough for timber production, it is important, however, that the growth of the trees in subsequent periods is appropriately discounted.

E. Depreciation and depletion

11.228 The concept of depreciation and depletion has been described and defined in chapter 7 on Production account, in connection with the difference between gross and net value added and then carries through all subsequent balancing items that may also be shown gross or net of depreciation and depletion. The capital account is where the counterpart entries to the entries in the production account appear though unusually they appear on the same side as in the production account but with a negative sign rather than on the opposite side of the account.

1. Depreciation

11.229 Depreciation constitutes a negative change in the value of the fixed assets used in production. Depreciation must be measured with reference to a given set of prices, that is, the average prices of the type of asset of constant quality over the period. It may then be defined as the decline, between the beginning and the end of the accounting period, in the value of the fixed assets owned by an enterprise, as a result of their physical deterioration and normal rates of obsolescence and accidental damage. Depreciation may be deducted from gross fixed capital formation to obtain net fixed capital formation to match the balancing item of net saving carried down from the use of income account.

11.230 Depreciation applies to all fixed assets and for every year the asset is in use in production. Because costs of ownership transfer are treated as fixed assets, including terminal costs, they are also subject to depreciation. All buildings and other structures are assumed to have finite service lives, even when properly maintained, so that depreciation is calculated for all such fixed assets, including railways, roads, bridges, tunnels, airports, harbours, pipelines, dams, etc. Service lives are not determined purely by physical durability, and many pieces of equipment as well as buildings and structures are eventually scrapped because they have become obsolete. However, the service lives for some structures such as certain roads, bridges, dams, etc., may be as long as a century or more.

Costs of ownership transfer

11.231 The costs of ownership transfer on the acquisition and disposal of a fixed asset are treated as gross fixed

capital formation and included in the value of the asset on acquisition and disposal as recorded in the capital account and in the value of the asset in the balance sheet. However, although depreciation is calculated on the value of the asset excluding the costs of ownership transfer over the whole of its life, the depreciation in respect of the costs of ownership transfer is calculated only over the period that the owner expects to hold the asset. In this way there are no remaining costs of ownership transfer included in the value of the asset when it is sold to a new owner, so the amount the old owner receives is equal to the amount the new owner pays except for any costs of ownership transfer incurred by the new owner.

11.232 In the case of non-produced non-financial assets, the costs of ownership transfer are shown as transactions in gross fixed capital formation in the capital account separately from the acquisition and disposal of non-produced non-financial assets, but the value of the relevant assets in the balance sheet includes the value of the costs of ownership transfer. The costs of ownership transfer are still written off according to the expected length of time the owner will hold the asset and treated as depreciation in the relevant production account.

Terminal costs

11.233 In principle, the value of depreciation cumulated over the life of an asset, once price changes are taken into account, should be equal to the difference between the acquisition and disposal values. In the case of assets with actual costs at the time of disposal, this means that depreciation should cover anticipated terminal costs. Terminal costs should therefore be written off over the whole life of the asset, regardless of the number of owners during the life of the asset. To avoid a negative value of the asset at the end of its life, the expected terminal costs are added to the value of the asset at the time the asset enters the balance sheet, with a counterparty entry of provisions at the liability side, both to be recorded in the other changes in the volume of assets and liabilities accounts. At the end of the life of the asset, the actual investment expenditures on terminal costs, which lead to a positive change in the value of the asset, are counterbalanced with a reversal of the flows in the beginning of the period, i.e., a decline in the value of assets with a concomitant decline of the related provisions, again recorded as other changes in the volume of assets and liabilities.

11.234 In practice, it may be difficult to predict terminal costs accurately. In that case, cumulated depreciation may not cover all the terminal costs. However, the full costs are still treated as gross fixed capital formation and any amount not already covered by depreciation during the life of the asset is written off at the time the costs are incurred as depreciation. This is a pragmatic recommendation and will lead to NDP being overstated over the time the asset is in use and understated in the year when the remaining costs are incurred.

11.235 There is further discussion on the treatment of costs of ownership transfer and terminal costs in chapter 17 on Capital services.

2. Depletion

11.236 In physical terms, depletion refers to the decrease in the quantity or value of the stock of a non-produced natural resource over an accounting period that is due to the extraction of the natural resource by economic units occurring at a level greater than that of its growth. In monetary terms, it corresponds with the decline in future income, due to extraction, that can be earned from a resource, the value of which is based on the physical flows of depletion using the price of the natural resource in situ.

11.237 For non-renewable mineral and energy resources, depletion is confined to the decrease of the value on the natural resource due to extraction. Other changes in value, such as those related to the discoveries and upward and downward reappraisals are recorded as other changes in the volume of assets. The same holds for transfers of natural resources out of economic activity because of changing technology, or reduced demand for the resulting output or for legislative reasons. For more details, see chapter 13 on Other changes in assets and liabilities accounts.

11.238 Bare land and renewable energy resources are not subject to depletion. However, in the case the value of land is combined with another asset, the combined asset may be subject to depreciation or depletion. For non-cultivated biological resources yielding once-only products, a decline in the regenerative potential of the underlying asset (e.g., the case where the extraction of fish is larger than its natural growth) is to be recorded as depletion. A growth in the regenerative potential is to be recorded as negative depletion. In the case of

cultivated biological resources yielding once-only products, the growth and decline of the regenerative potential of the underlying asset (mainly relating to forest land in the case of the growth of trees for the production of timber) is also to be recorded as (negative) depletion. Biological resources yielding repeat products are typically classified as fixed assets, and the decline as a result of their physical deterioration and normal rates of obsolescence and accidental damage should be recorded as part of depreciation.

F. Capital transfers

1. Capital versus current transfers

11.239 ***Capital transfers (D9) are unrequited transfers, either in cash of in kind, linked to the acquisition, disposal or transfer of an asset (other than cash or inventories); or where a liability is forgiven or assumed; or where the transfers are intended to address accumulated losses incurred over a multi-year period.*** Capital transfers are often large and irregular but neither of these are necessary conditions for a transfer to be considered a capital rather than a current transfer.

Table 11.5: The capital account - capital transfers - changes in liabilities and net worth

Changes in liabilities and net worth

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
B8n	*Saving, net*	35	0	- 54	192	2	175			175
B12	*Current external balance*							- 13		- 13
NF1	Acquisitions less disposals of produced non-financial assets (excluding natural resources)									
NF11	Gross fixed capital formation								349	349
NF12	Depreciation (-)									
NF13	Changes in inventories								25	25
NF14	Acquisitions less disposals of valuables								10	10
NF2	Acquisitions less disposals of non-produced non-financial assets (excluding natural resources)									
NF3	Acquisitions less disposals of natural resources									
NF31	Gross fixed capital formation								27	27
NF32	Depreciation (-)									
NF33	Changes in inventories								3	3
NF34	Acquisitions less disposals of non-produced natural resources									
NF35	Depletion (-)									
D9r	Capital transfers, receivable	33	0	6	23	0	62	4		66
D91r	Capital taxes, receivable			2			2			2
D92r	Investment grants, receivable	23	0	0	0	0	23	4		27
D93r	Debt forgiveness, receivable	0	0	0	0	0	0	0		0
D99r	Other capital transfers, receivable	10	0	4	23	0	37			37
D9p	Capital transfers, payable	- 16	- 7	- 34	- 5	- 3	- 65	- 1		- 66
D91p	Capital taxes, payable	0	0	0	- 2	0	- 2	0		- 2
D92p	Investment grants, payable			- 27			- 27			- 27
D93p	Debt forgiveness, payable	0	0	0	0	0	0	0		0
D99p	Other capital transfers, payable	- 16	- 7	- 7	- 3	- 3	- 36	- 1		- 37
B101	Changes in net worth due to saving and capital transfers	52	- 7	- 82	210	- 1	172	- 10		162

11.240 A current transfer reduces the income and consumption possibilities of the first party and increases the income and consumption possibilities of the second party. Current transfers are therefore not linked to, or conditional on, the acquisition or disposal of assets by one or both parties to the transaction.

11.241 Some cash transfers may be regarded as capital by one party to the transfer but as current by the other. For example, the payment of an inheritance tax may be regarded as the transfer of capital by the taxpayer but be regarded as a current receipt by government because it receives many such transfers. Similarly, a large country that makes investment grants to a number of smaller countries may regard the grants as current transfers even though they are specifically intended to finance the acquisition of capital assets. In an integrated system of accounts, such as the SNA, it is not feasible, however, to classify the same transaction differently in different places. Accordingly, a transfer should be classified as capital for both parties even if it involves the acquisition or disposal of an asset, or assets, by only one of the parties. By convention, social transfers are always treated as current transfers.

11.242 There may be cases in which it is difficult to decide on the evidence available whether to classify a cash transfer as current or capital. When there is serious doubt, the transfer should be classified as current rather than capital. It should be noted, however, that the decision as to which way to classify a transfer has important consequences for the allocation of saving between sectors and subsectors, and possibly between the economy as a whole and the rest of the world. Other things being equal, a current transfer increases the saving of the recipient and reduces that of the donor, whereas a capital transfer does not affect the saving of either party. If, therefore, cash transfers are incorrectly classified between current and capital, the saving behaviour recorded for the units or subsectors involved may be misleading for purposes of economic analysis and policymaking.

2. Transfers in cash and in kind

11.243 As explained in chapter 9 on Transfer income accounts, transfers may take place in cash or in kind. A capital transfer in kind necessarily concerns the change of ownership of a product previously recorded as a non-financial asset in the accounts of the donor. In this case, the four entries relating to the transaction are all recorded in the capital account. Two relate to the transfer of wealth implied by a capital transfer; the other two are shown as disposal of the asset being transferred by the donor and its acquisition by the recipient. The treatment of fixed assets produced by communal construction and then transferred to government to maintain is discussed in paragraph 11.67.

11.244 All other capital transfers have two entries in the capital account and two in the financial account. In the case of debt forgiveness, the two entries in the financial account show the reduction in the debt liability of the recipient towards the donor and the claim of the donor on the recipient. In the case of debt assumption (without an effective claim) the two entries in the financial account are a reduction in the debt liability of the original debtor and a parallel increase in the debt liability of the party assuming the debt. Other capital transfers are recorded as a transfer in cash and show a decrease in cash or deposits of the donor and an increase by the recipient.

Valuation

11.245 The value of a non-financial asset being transferred is the estimated price at which the asset, whether new or used, could be sold on the market plus any transport, installation or other costs of ownership transfer incurred by the donor but excluding any such charges incurred by the recipient. Transfers of financial assets, including the cancellation of debts, are valued in the same way as other acquisitions or disposals of financial assets or liabilities.

3. Capital taxes

11.246 ***Capital taxes (D91) consist of taxes levied at irregular and infrequent intervals on the values of the assets***

or net worth owned by institutional units or on the values of assets transferred between institutional units as a result of legacies, gifts inter vivos or other transfers. They include capital levies and taxes on capital transfers:

a. ***Capital levies consist of taxes on the values of the assets or net worth owned by institutional units levied at irregular, and very infrequent, intervals of time.*** Capital levies are treated as exceptional both by units concerned and by the government. They may be payable by households or enterprises. They include betterment levies: that is, taxes on the increase in the value of agricultural land due to planning permission being given by government units to develop the land for commercial or residential purposes;

b. ***Taxes on capital transfers consist of taxes on the values of assets transferred between institutional units. They consist mainly of inheritance taxes, or death duties, and gift taxes, including gifts inter vivos made between members of the same family to avoid, or minimize, the payment of inheritance taxes. They do not include taxes on sales of assets as these are not transfers***.

4. Investment grants

11.247 ***Investment grants (D92) consist of capital transfers made by governments or international organisations to other institutional units to finance all or part of the costs of their acquiring non-financial assets.*** The recipients are obliged to use investment grants for purposes of capital formation, and the grants are often tied to specific investment projects, such as large construction projects. If the investment project continues over a long period of time, an investment grant in cash may be paid in instalments. Payments of instalments continue to be classified as capital transfers even though they may be recorded in a succession of different accounting periods.

11.248 Investment grants in kind consist of transfers of transport equipment, machinery and other equipment by governments to other resident or non-resident units and also the direct provision of buildings or other structures for resident or non-resident units. These may be constructed by enterprises owned by the donor government or by other enterprises that are paid directly by the donor government. In such cases, a capital transfer in cash is usually recorded followed by purchase of the items actually transferred in kind. Exceptionally, if the transfer is of an existing asset, and the recipient is resident, the transfer of ownership of the asset may be recorded as negative capital formation by government and positive capital formation by the recipient, but a capital transfer is still also recorded so that the balance sheet of both parties correctly reflects the change in net worth that has taken place.

5. Debt forgiveness

11.249 ***Debt forgiveness (D93) concerns the voluntary cancellation of all or part of a debt obligation within a contractual agreement between a creditor and a debtor. In contrast to debt write-offs, debt forgiveness arises from an agreement between the parties to the debt with the intention to convey a benefit to the debtor, rather than unilateral recognition by the creditor for amounts that they no longer expect to collect.*** For more information on different types of debt reorganization, see paragraphs 30.106 to 30.124.

6. Other capital transfers

11.250 ***Other capital transfers (D99) consist of all capital transfers except capital taxes, investment grants and debt forgiveness***. One notable category included here is the cancellation of debt by mutual agreement between the creditor and the debtor. Such a cancellation is treated as a capital transfer from the creditor to the debtor equal to the value of the outstanding debt at the time of cancellation. It includes, but is not confined to, the cancellation of debt owed by non-residents to residents, and vice versa. Another example is the assumption of debt where a unit taking over the debt of another unit does not have an effective claim on the original debtor.

11.251 However, the unilateral writing off of debt is not a transaction between institutional units and therefore does

not appear either in the capital account or the financial account of the SNA sequence of economic accounts. If the creditor accepts such a write off or default, it should be recorded in the other changes in the volume of assets and liabilities account of the creditor and the debtor. Provisions, among which those for bad debt, are treated as bookkeeping entries that are internal to the enterprise and do not appear in the integrated framework of national accounts except in cases described in chapter 14 on Balance sheet, where they appear as supplementary items in the balance sheets. The unilateral repudiation of debt by a debtor is also not a transaction and is not recognized in the SNA sequence of economic accounts.

11.252 Capital transfers may take various other forms, of which some examples are given below:

a. Major payments in compensation for extensive damages or serious injuries not covered by insurance policies. They are typically intended to recover losses over a multi-year period or to replace an asset (financial or non-financial). The payments may be awarded by courts of law or settled out of court. They may be made to resident or non-resident units. They include payments of compensation for damages caused by major explosions, oil spillages, the side effects of drugs, etc.;

b. Economic contributions by individuals to another country to obtain an additional citizenship, passport, or long-term visa, if these contributions are specifically earmarked for capital investment projects;

c. Exceptionally large insurance settlements in the wake of a disaster. For more details on when this is the appropriate form of recording, see chapter 24 on Insurance and pensions;

d. Transfers from government units to publicly or privately owned enterprises to cover large operating deficits accumulated over two or more years;

e. Transfers from central government to units at lower levels of government to cover some, or all, of the costs of gross fixed capital formation or large expenditure deficits accumulated over two or more years;

f. Legacies or large gifts inter vivos, including legacies to NPIs;

g. Exceptionally large donations by households or enterprises to NPIs to finance gross fixed capital formation: for example, gifts to universities to cover the costs of building new residential colleges, libraries, laboratories, etc.;

h. Unrequited or partially requited transfers of responsibility for pension entitlements, for example when general government assumes responsibility for pensions provisions from an employer. For more details, see chapter 24;

i. Negotiated changes in the terms and conditions of defined benefit pension entitlements. For more details, see chapter 24;

j. Community built assets where responsibility for maintenance is then assumed by government or by an NPISH.

Chapter 12: Financial account

A. Introduction

12.1 The financial account is the final account in the full sequence of economic accounts that records transactions between institutional units. Net saving is the balancing item of the use of income accounts, and net saving plus net capital transfers receivable or payable can be used to accumulate non-financial assets. If they are not exhausted in this way, the resulting surplus is called net lending. Alternatively, if net saving and capital transfers are not sufficient to cover the net accumulation of non-financial assets, the resulting deficit is called net borrowing. This surplus or deficit, net lending or net borrowing, is the balancing item that is carried forward from the capital account into the financial account. The financial account does not have a balancing item that is carried forward to another account, as has been the case with all the accounts discussed in previous chapters. It simply explains how net lending or net borrowing is effected by means of changes in holdings of financial assets and liabilities. The sum of these changes is conceptually equal in magnitude, but on the opposite side of the account, to the balancing item of the capital account.

12.2 The financial account records transactions that involve financial assets and liabilities and that take place between resident institutional units and between resident institutional units and the rest of the world. The left-hand side of the account (table 12.1) records acquisitions less disposals of financial assets, while the right-hand side records incurrence less repayments of liabilities.

1. Financial assets and liabilities

12.3 As described in chapter 4 on Flows, stocks and accounting rules, an asset is defined as follows. ***An asset is a store of value representing an economic benefit or series of economic benefits accruing to the economic owner by holding or using the item over a period of time. It is a means of carrying forward value from one accounting period to another***.

12.4 Economic benefits are exchanged by means of payments. From this a financial claim, and hence a liability, can be defined. There are no non-financial liabilities recognized in the sequence of economic accounts of the SNA, thus the term liability necessarily refers to a liability that is financial in nature.

12.5 ***Liabilities are obligations where one unit (the debtor) is obliged, under specific circumstances, to provide funds or other resources to another unit (the creditor). These include shares and other equity in corporations***. The most common circumstance in which a liability is established is a legally binding contract that specifies the terms and conditions of the payment(s) to be made and payment according to the contract is unconditional. Shares and equity are regarded as claims as they represent claims of the owners on the residual value of the corporations.

12.6 In addition, a liability may be established not by contract but by long and well-recognized custom that is not easily refuted. Some payments by government to individuals fall under this category. In these cases, the creditor may have a valid expectation of payment, despite the lack of a legally binding contract. Such liabilities, usually referred to as constructive liabilities, are not recognised in the sequence of economic accounts. Specific guidance on the recognition and the recording of pension entitlements and various types of insurance technical reserves is provided in section C of this chapter and in chapter 24 on Insurance and pensions.

12.7 Whenever a liability exists, there is a corresponding financial claim that the creditor has against the debtor. ***Financial claims are financial instruments that give rise to an economic asset that has a counterpart liability, including shares and other equity in corporations.*** Like the liabilities, the claims are unconditional. In addition, a financial claim may exist that entitles the creditor to demand payment from the debtor but whereas the payment by the debtor is unconditional if demanded, the demand itself is discretionary on the part of the creditor. Shares are treated as financial claims even though the claim their holders have on the corporation is not a fixed or predetermined monetary amount.

12.8 ***Financial assets consist of financial claims and gold bullion held by monetary authorities as a reserve***

asset. Gold bullion held by monetary authorities as a reserve asset is thus treated as a financial asset even though the holders do not have a claim on other designated units.

Table 12.1: The financial account - concise form - changes in assets

Changes in assets

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
	Net acquisition of financial assets	60	170	16	189	2	437	48		485
F1	Monetary gold and SDRs		- 1				- 1	1		0
F2	Currency and deposits	16	8	0	64	2	90	11		101
F3	Debt securities	7	66	4	10	- 1	86	10		96
F4	Loans	19	53	3	3	0	78	4		82
F5	Equity and investment fund shares / units	10	28	3	66	0	107	12		119
F6	Insurance, pension and standardized guarantee schemes	1	7	1	39	0	48	0		48
F7	Financial derivatives and employee stock options	3	8	0	3	0	14	0		14
F8	Other accounts receivable/payable	4	1	5	4	1	15	10		25

Table 12.1 (cont): The financial account - concise form - changes in liabilities and net worth

Changes in liabilities and net worth

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
B9	*Net lending (+) / net borrowing (–)*	- 80	- 3	- 77	174	- 4	10	- 10		0
	Net acquisition of liabilities	140	173	93	15	6	427	58		485
F1	Monetary gold and SDRs	0	0	0	0	0	0	0		0
F2	Currency and deposits	0	65	37	0	0	102	- 1		101
F3	Debt securities	7	30	38	0	0	75	21		96
F4	Loans	21	0	9	11	6	47	35		82
F5	Equity and investment fund shares / units	83	22	0	0	0	105	14		119
F6	Insurance, pension and standardized guarantee schemes	0	48	0	0	0	48	0		48
F7	Financial derivatives and employee stock options	3	8	0	0	0	11	3		14
F8	Other accounts receivable/payable	26	0	9	4	0	39	- 14		25

2. Quadruple-entry accounting

12.9 The accounting rules applied in the integrated framework of the SNA, explained in chapter 4 on Flows, stocks and accounting rules, describe how the quadruple principle of accounting is implemented. When a good, service, asset (or liability) is sold by one institutional unit to another, two pairs of entries are recorded. The first pair records the supply of the item by one unit and the acquisition by the other. The second pair of entries

records the second party supplying the means of payment for the item, and the first party receiving this. Similar quadruple entries are required in respect of transactions involving property income and transfers. The second pair of entries usually appears in the financial account though in a few cases of transfers in kind the second pair of entries may appear as negative and positive final consumption expenditure or disposal and acquisition of a non-financial asset. The latter also holds for cases where the counterpart entry consists of crypto assets without a corresponding liability designed to act as a general medium of exchange, and those designed to act as a medium of exchange within a platform only, which are treated as non-produced non-financial assets. In all cases of transactions involving financial instruments mentioned above, the first pair of entries appears in one or more of the non-financial accounts. In the case of the exchange of a financial instrument, all four entries appear in the financial account.

12.10 There are thus two reasons for entries in the financial account. The first reason is as counterpart to entries in other accounts; the second is to record transactions involving the exchange of financial assets and liabilities only, so both the original and the counterpart entries are recorded in the financial account.

3. Counterparts of non-financial transactions

12.11 Transactions involving the transfer of ownership of a good or non-financial asset, or the provision of a service or labour almost always entail a counterpart entry in the financial account for means of payment or claims on future means of payment. Even many transactions in kind, such as barter sales and remuneration in kind, conceptually lead to entries in the financial account. If unit A provides a product of value x to unit B, expecting another product of the same value in return, A has a financial claim of x on B. This financial claim is settled and thus no longer needs to be recorded when B fulfils delivery of the product promised. Entries in the financial account are needed when all elements of the in-kind transaction are not completed simultaneously.

12.12 The sale of a good, service or asset may have as its counterpart a change in currency or transferable deposit. Alternatively, the counterpart may be reflected in the financial account in a trade credit or other category of accounts receivable/payable.

4. Exchanges of financial assets and liabilities

12.13 Whenever one financial asset is exchanged for another or when a liability is repaid with a financial asset, transactions are recorded only in the financial account. These transactions change the distribution of the portfolio of financial assets and liabilities and may change the totals of both financial assets and liabilities, but they do not change the difference between total financial assets and liabilities. For example, trade credit is extinguished by payments. The claim represented by the trade credit no longer exists when the debtor provides means of payment to the creditor. The resulting four entries in the financial account are:

a. the creditor reduces its holdings of trade credit and increases its means of payment (currency or transferable deposits); and

b. the debtor reduces its liabilities (in the form of trade credit) and reduces its financial assets (in the form of means of payment).

12.14 When existing financial assets are exchanged for other financial assets, all entries take place in the financial account and only affect assets. For example, if a debt security such as an existing bond is sold by one institutional unit to another on the secondary market, the seller reduces his holdings of securities and increases his holdings of means of payment by an equal amount. The purchaser increases his holdings of securities and decreases his holdings of means of payment.

12.15 When a new financial asset is created through the incurrence of a liability by an institutional unit, all related entries are also made in the financial account. For example, a corporation may issue short-term securities in exchange for means of payment. The financial account of the corporate sector accordingly shows an increase in liabilities in the form of securities and an increase in financial assets in the form of means of payment; the financial account of the purchasing sector shows a reduction in assets in the form of means of payment and an increase in assets in the form of securities.

5. Net lending

12.16 Some sectors or subsectors are net lenders while others are net borrowers. When institutional units engage in financial transactions with each other, the surplus resources of one sector can be made available by the units concerned for use by other sectors. The financial account indicates how deficit, or net borrowing, sectors obtain the necessary financial resources by incurring liabilities or reducing assets and how the net lending sectors allocate their surpluses by acquiring financial assets or reducing liabilities. The account also shows the relative contributions of various categories of financial assets to these transactions.

12.17 The evolution of net lending can be seen clearly in table 12.1. Non-financial corporations are shown to have a net borrowing requirement of 56. This requirement is financed by incurring liabilities of 139 and acquiring financial assets of 83; the difference between the two equals net borrowing. Similarly, the household sector, which has a net lending balance of 174, achieves this result by acquiring financial assets of 189 and incurring liabilities of 15.

12.18 Although much borrowing and lending is routed through financial intermediaries, some borrowers can transact directly with non-financial lenders. For example, governments can issue securities in the market; these securities can be purchased by households, non-financial corporations and the rest of the world as well as by financial institutions. In many other cases, financial intermediaries have as their special function the creation of a financial market that links lenders and borrowers indirectly. The financial corporation incurs liabilities to net lenders through taking deposits or issuing securities and providing the financial resources thus mobilized to borrowers, for example in the form of loans, holding of debt securities and holdings of equity securities. Thus, their transactions in financial assets and liabilities will be comparatively large relative to other sectors and to the size of their own net lending or borrowing. In table 12.1, the financial corporations' sector has a net borrowing of 1, which is financed by net incurrence of liabilities of 173 and net acquisition of financial assets of 172.

12.19 An examination of the financial transactions of the subsectors of the financial corporations' sector, in addition to those of the consolidated financial sector, is often useful.

12.20 It is important to note that, for each institutional sector, the financial account indicates the types of financial instruments utilized by that sector to incur liabilities and acquire financial assets. The financial account does not, however, indicate to which sectors the liabilities are incurred and on which sectors the assets indicate financial claims. A more detailed and complex analysis of financial flows between sectors is discussed in chapter 37 on From-whom-to-whom tables and related financial indicators. The analysis there illustrates debtor or creditor relationships by type of financial asset.

12.21 In the hypothetical case of a closed economy in which resident institutional units do not engage in transactions with non-residents, the total net lending and total net borrowing of the various sectors would have to be equal since the net borrowing requirements of deficit sectors would be met by net lending of surplus sectors. For the economy as a whole, net lending or borrowing would have to be zero. This equality reflects the symmetric nature of financial assets and liabilities. When residents engage in transactions with non-residents, the sum of the net lending and net borrowing of each of the sectors making up the total economy must equal the economy's net lending to, or borrowing from, the rest of the world. In table 12.1 the total economy has acquired financial assets of 436 and incurred liabilities of 426. Net lending for the total economy to the rest of the world is therefore 10.

6. Contingent assets and liabilities

12.22 Many types of contractual financial arrangements between institutional units do not give rise to unconditional requirements either to make payments or to provide other objects of value; often the arrangements themselves do not have transferable economic value. These arrangements, which are often referred to as contingent assets and liabilities, are not actual current financial assets and are not recorded in the SNA sequence of economic accounts. The principal characteristic of contingent assets and liabilities is that one or more conditions must be fulfilled before a financial transaction takes place. One-off guarantees of payment by third parties, whether implicit or explicit, are contingent assets and liabilities since payment is only required if the principal debtor defaults. Until the default is evident, the value of the one-off guarantee may be shown as a supplementary item. Loan commitments provide a guarantee that funds will be made available but no financial asset exists

until funds are actually advanced. Letters of credit constitute promises to make a payment conditional upon the presentation of certain documents specified by contract. Underwritten note issuance facilities (NIFs) provide a guarantee that a potential debtor will be able to sell short-term securities (notes) that he issues and that the bank or banks issuing the facility will take up any notes not sold in the market or will provide equivalent advances. The facility itself is contingent, and the creation of the facility does not give rise to an entry in the financial account. Only if the underwriting institution is requested to make funds available will it acquire an actual asset, which is recorded in the financial account.

12.23 Standardized guarantees are treated as giving rise to actual and not contingent assets and liabilities. A standardized guarantee is one where many guarantees of similar characteristics are issued. Even though the probability of any one guarantee being called is uncertain, the fact that there are many similar guarantees means that a reliable estimate of the number of calls under the guarantee can be made. Liabilities of this sort where the size of the liability may be determined probabilistically are often described as provisions. The term liability is used when the fact that payment will be required and the amount of the payment or the way in which the amount will be calculated are agreed. The term provision is used when the fact that a payment will be required is regarded as certain but there is no agreement on how the amount payable will be determined. A contingent liability is one where the size of payment may or may not be known with certainty but there is uncertainty about whether there will be a payment required or not.

12.24 For the purposes of the sequence of economic accounts, the treatment of contingent assets and liabilities is simple. Any payments of fees related to the establishment of contingent arrangements are treated as payments for services. Transactions are recorded in the financial account only when an actual financial asset is created or changes ownership. However, by conferring certain rights or obligations that may affect future decisions, contingent arrangements obviously produce an economic impact on the parties involved. Collectively, such contingent assets and liabilities may be important for financial programming, policy and analysis. Therefore, where contingent positions are important for policy and analysis, it is encouraged that information be collected and presented as supplementary data. Even though no payments may eventually be due for contingent liabilities, the existence of a high level of them may indicate an undesirable level of risk on the part of those units offering them. An example is an overdraft facility on a bank account, which is contingent until exercised.

12.25 Country practices may vary in determining which instruments are considered contingent and which are considered actual assets to be recorded in the balance sheet. Flexibility in the application of this recommendation is required to take national practices and variations in the nature of these instruments into account. An example, which is quantitatively important in trade financing, is the bankers' acceptance. A banker's acceptance involves the acceptance by financial institutions of drafts or bills of exchange and the unconditional promise to pay a specific amount at a specified date. The banker's acceptance represents an unconditional claim on the part of the holder and an unconditional liability on the part of the accepting bank; the bank's counterpart asset is a claim on its customer. For this reason, the banker's acceptance is treated as an actual financial asset in the sequence of economic accounts even though no funds may have been exchanged.

12.26 There are other circumstances where future payments are not treated as assets, even though both the size of the payment and the fact that it will be paid are known with a high degree of certainty. One example is that although a bank loan may be granted to an individual using the fact that he is in permanent employment with a regular wage as security, the promise of future earnings is not recognized as a financial asset; nor are future receipts from sales for an enterprise nor a stream of future tax revenue for government.

B. Transactions in financial assets and liabilities

1. The classification of financial assets and liabilities

12.27 Because of the symmetry of financial claims and liabilities, the same classification can be used to portray both assets and liabilities. Further, the same classification is used in all accumulation accounts for financial transactions. Within the sequence of economic accounts of the SNA, the term "instrument" may be used to relate to the asset or liability aspect of an item on the financial balance sheet. In monetary statistics, some off-balance sheet items may also be described as instruments. The use of the same term in the sequence of

economic accounts of the SNA is for convenience only and does not imply an extension of the coverage of assets and liabilities to include these off-balance-sheet items.

12.28 One class of financial assets that cannot properly be equated with identified claims over other designated institutional units is gold bullion owned by monetary authorities and others subject to the monetary authorities' effective control and held as a financial asset as a component of international reserve assets. There is no matching liability for gold bullion.

12.29 Table 12.2 shows an elaboration of table 12.1 incorporating the classification of financial instruments. The exact coverage and the definition of each of the items are described in section C along with an explanation of the types of transactions appearing in the financial account that apply to each instrument. (For a discussion of financial instruments in the context of Islamic finance, reference is made to chapter 26.) The remainder of this section deals with general matters of classification and the application of the accounting rules in the sequence of economic accounts of the SNA as they apply to transactions in financial instruments.

12.30 The detail in which the classification is employed depends on the institutional sector to be analysed. The types of financial assets in which households transact are more limited than those for other sectors, and sources of information are generally more limited than those for other sectors. Financial corporations, on the other hand, transact in the full range of instruments, and information on their operations is often the most detailed and timely of any institutional units. Consequently, a detailed breakdown may be developed for financial corporations. Blanks, rather than zeros, in table 12.2 show where entries are conceptually impossible; zeros show that entries are possible but expected to be small.

12.31 The standard items in the classification of financial assets and liabilities provide a useful basis for international comparison of national data. Presentation of data for individual countries, however, must be tailored to meet their analytical needs and to reflect national practices. Thus the particular form of presentation chosen may reflect differing institutional arrangements, the extent and nature of national financial markets, the complexity of financial assets available, and the degree of regulation and other financial control exercised. For this reason, a number of supplementary items are suggested for use in addition to the standard components of the SNA. These are described together with the standard items in section C.

12.32 The classification of financial transactions has become more difficult because of financial innovation that has led to the development and increased use of new and often complex financial assets and other financial instruments to meet the needs of investors with respect to maturity, yield, avoidance of risk, and other factors. The identification issue is further complicated by variations in characteristics of financial instruments across countries and variations in national practices on accounting and classification of instruments. These factors tend to limit the scope for firm recommendations with respect to the treatment of certain transactions within the SNA sequence of economic accounts. Thus, a substantial amount of flexibility, particularly with regard to further breakdowns, is required to match the classification scheme to national capabilities, resources and needs. In particular, further breakdowns of the standard items are desirable for many countries to distinguish important types of assets within categories (such as short-term securities included in measures of money).

2. Negotiability

12.33 Financial claims can be distinguished as to whether they are negotiable or not. A claim is negotiable if its legal ownership is readily capable of being transferred from one unit to another unit by delivery or endorsement. While any financial instrument can potentially be traded, negotiable instruments are designed to be traded on organized and other markets. Negotiability is a matter of the legal form of the instrument, and evidence of actual trading is not required. Those financial claims that are negotiable are referred to as securities. Some securities may be legally negotiable, but there is not, in fact, a liquid market where they can be readily bought or sold. Securities include shares and debt securities. Listed financial derivatives, such as warrants, are sometimes considered to be securities. However, in the SNA sequence of economic accounts, financial derivatives are treated as a distinct type of financial asset that is neither a debt or equity security.

Table 12.2: The financial account – full detail – changes in assets

Changes in assets

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
	Net acquisition of financial assets	60	170	16	189	2	437	48		485
F1	Monetary gold and SDRs		- 1				- 1	1		0
F11	Monetary gold		0				0	0		0
F12	SDRs		- 1				- 1	1		0
F2	Currency and deposits	16	8	0	64	2	90	11		101
F21	Currency	5	15	2	10	1	33	3		36
F22	Crypto-assets with a corresponding liability designed to act as a general medium of exchange	0	0	0	1	0	1	0		1
F23	Transferable deposits	7	- 7	- 1	26	1	26	2		28
F29	Other deposits	4	0	- 1	27	0	30	6		36
F3	Debt securities	7	66	4	10	- 1	86	10		96
F31	Short-term debt securities	10	13	1	3	0	27	2		29
F32	Long-term debt securities	- 3	53	3	7	- 1	59	7		66
F33	Crypto assets with a corresponding liability designed to act as a medium of exchange within a platform, short-term	0	0	0	0	0	0	0		0
F34	Crypto assets with a corresponding liability designed to act as a medium of exchange within a platform, long-term	0	0	0	0	0	0	1		1
F35	Utility tokens	0	0	0	0	0	0	0		0
F4	Loans	19	53	3	3	0	78	4		82
F41	Short-term loans	14	4	1	3	0	22	3		25
F42	Long-term loans	5	49	2	0	0	56	1		57
F5	Equity and investment fund shares / units	10	28	3	66	0	107	12		119
F51	Equity	10	25	3	53	0	91	12		103
F511	Listed shares	5	23	1	48	0	77	10		87
F512	Unlisted shares	3	1	1	2	0	7	2		9
F519	Other equity and equity in international organizations	2	1	1	3	0	7	0		7
F52	Investment fund shares/units	0	3	0	13	0	16	0		16
F521	Money market fund shares/units	0	2	0	5	0	7	0		7
F522	Non MMF investment fund shares/units	0	1	0	8	0	9	0		9
F6	Insurance, pension and standardized guarantee schemes	1	7	1	39	0	48	0		48
F61	Non-life insurance technical reserves	1	2	0	4	0	7	0		7
F62	Life insurance and annuity entitlements	0	0	0	22	0	22	0		22
F63	Pension entitlements				11		11	0		11
F64	Claims of pension funds on pension sponsors		3				3	0		3
F65	Entitlements to non-pension benefits				2		2	0		2
F66	Provisions for calls under standardized guarantees	0	2	1	0	0	3	0		3
F7	Financial derivatives and employee stock options	3	8	0	3	0	14	0		14
F71	Financial derivatives	3	8	0	1	0	12	0		12
F711	Foreign currency derivatives						0			0
F712	Single currency interest rate derivatives						0			0
F713	Equity derivatives						0			0
F713	Commodity derivatives						0			0
F715	Credit derivatives						0			0
F719	Other derivatives						0			0
F72	Employee stock options	0			2		2			2
F8	Other accounts receivable/payable	4	1	5	4	1	15	10		25
F81	Trade credit and advances	3		1	3		7	8		15
F82	Emission permits						0			0
F89	Other	1	1	4	1	1	8	2		10

Table 12.2 (cont): The financial account – full detail – changes in liabilities and net worth

Changes in liabilities and net worth

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
B9	*Net lending (+) / net borrowing (–)*	- 80	- 3	- 77	174	- 4	10	- 10		0
	Net acquisition of liabilities	140	173	93	15	6	427	58		485
F1	Monetary gold and SDRs	0	0	0	0	0	0	0		0
F11	Monetary gold						0			0
F12	SDRs						0			0
F2	Currency and deposits	0	65	37	0	0	102	- 1		101
F21	Currency			35			35	1		36
F22	Crypto-assets with a corresponding liability designed to act as a general medium of exchange	0	0				0	1		1
F23	Transferable deposits		26	2			28	0		28
F29	Other deposits		39				39	- 3		36
F3	Debt securities	7	30	38	0	0	75	21		96
F31	Short-term debt securities	2	18	4	0	0	24	5		29
F32	Long-term debt securities	4	12	34	0	0	50	16		66
F33	Crypto assets with a corresponding liability designed to act as a medium of exchange within a platform, short-term	0	0				0	0		0
F34	Crypto assets with a corresponding liability designed to act as a medium of exchange within a platform, long-term	1	0				1	0		1
F35	Utility tokens	0	0				0	0		0
F4	Loans	21	0	9	11	6	47	35		82
F41	Short-term loans	4	0	3	2	2	11	14		25
F42	Long-term loans	17	0	6	9	4	36	21		57
F5	Equity and investment fund shares / units	83	22	0	0	0	105	14		119
F51	Equity	83	11	0	0	0	94	9		103
F511	Listed shares	77	7				84	3		87
F512	Unlisted shares	3	4				7	2		9
F519	Other equity and equity in international organizations	3					3	4		7
F52	Investment fund shares/units	0	11	0	0	0	11	5		16
F521	Money market fund shares/units		5				5	2		7
F522	Non MMF investment fund shares/units		6				6	3		9
F6	Insurance, pension and standardized guarantee schemes	0	48	0	0	0	48	0		48
F61	Non-life insurance technical reserves		7				7	0		7
F62	Life insurance and annuity entitlements		22				22	0		22
F63	Pension entitlements		11				11	0		11
F64	Claims of pension funds on pension sponsors		3				3	0		3
F65	Entitlements to non-pension benefits		2				2	0		2
F66	Provisions for calls under standardized guarantees		3	0			3	0		3
F7	Financial derivatives and employee stock options	3	8	0	0	0	11	3		14
F71	Financial derivatives	2	7	0	0	0	9	3		12
F711	Foreign currency derivatives						0			0
F712	Single currency interest rate derivatives						0			0
F713	Equity derivatives						0			0
F713	Commodity derivatives						0			0
F715	Credit derivatives						0			0
F719	Other derivatives						0			0
F72	Employee stock options	1	1				2			2
F8	Other accounts receivable/payable	26	0	9	4	0	39	- 14		25
F81	Trade credit and advances	6	0	6	4	0	16	- 1		15
F82	Emission permits						0			0
F89	Other	20	0	3	0	0	23	- 13		10

3. Valuation of transactions

12.34 The payments required under a contract relating to financial assets and liabilities almost always represent more than one transaction in the sense used in the integrated framework of the SNA. Payments of interest on loans and deposits, as specified by financial corporations, involve both interest as recorded in the SNA (SNA interest) and a service fee, which is the service payment to the financial corporation for intermediating depositors and loan borrowers. The buying and selling prices for foreign currency, debt securities and shares are usually different; the difference between the buying price and mid-price represents a service provided to and charged to the buyer and the difference between the mid-price and selling price a service provided to and

charged to the seller. The mid-price is the mid-point of the buying and selling price at the time a transaction takes place; if the purchase and sale of a share, for instance, do not take place simultaneously, the mid-point for the sale and purchase price at the time of sale and of purchase will not necessarily be equal. For some financial instruments, for example bonds, the increase in value over time may represent interest, not simply a price increase in the value of the asset. In some cases more than one adjustment may be needed to the apparent transaction value to identify and re-route both the service charge and interest associated with the asset. See paragraphs 7.171 to 7.195 for more details on the measurement of financial services.

12.35 It is essential that the value of the transactions in financial instruments recorded in the financial account carefully excludes these service charges and interest payments. Chapter 25 on Selected issues in financial instruments describes the adjustments necessary to make these exclusions on an instrument-by-instrument basis.

12.36 Financial transactions with respect to proprietors' net additions to the accumulation of equity in quasi-corporations and changes in households' claims on insurance corporations and pension funds raise complex issues of valuation that are referred to in the relevant item under classification of these categories below and more extensively in chapter 24 on Insurance and pensions and chapter 25 on Selected issues in financial instruments.

4. Time of recording

12.37 In principle, the two parties to a financial transaction should record the transaction at the same point in time. When the counterpart to an entry in the financial account is in another account, the time of recording of financial claims is to be aligned with the time of recording in the other accounts of the transactions that gave rise to the financial claim. For example, when sales of goods or services give rise to a trade credit, the entries in the financial accounts should take place when ownership of the goods is transferred or when the service is provided. Similarly, when accounts receivable or payable arise from transactions related to taxes, remuneration of employees and other distributive transactions, the entries in the financial account should take place when the entries are made in the relevant non-financial account.

12.38 When all entries relating to a transaction pertain only to the financial account, they should be recorded when the ownership of the asset is transferred. This point in time is usually clear when the transaction involves the sale of existing financial assets. When the transaction involves the incurrence or redemption of a liability, both parties should record the transaction when the liability is incurred or redeemed. In most cases, this will occur when cash or some other financial asset is paid by the creditor to the debtor or repaid by the debtor to the creditor.

12.39 In practice, the two parties to a financial transaction may perceive the transaction as being completed at different points in time. This is especially true when trade credit or other accounts receivable/payable are extinguished by final payments and there is a lag between the point in time when payments are made and received, creating a "float". There are several stages at which creditors and debtors could record a transaction. The debtor could record the liability as being extinguished when the means of payment is issued to the creditor. A certain period of time may elapse before the creditor receives the means of payment and records the payment in his accounts. Asymmetries in time of recording of this transaction are, therefore, likely to emerge. A financial claim exists up to the point that the payment is cleared and the creditor has control of the funds; this would be the optimal point in time for recording the transaction. In some cases, the float may be significant and may affect, in particular, transferable deposits, trade credit, and other accounts receivable/payable. When the float is significant and accounts for large discrepancies in reporting, it is necessary to develop estimates of the size of the float in order to adjust the accounts.

5. Netting and consolidation

Netting

12.40 As described in chapter 4 on Flows, stocks and accounting rules, netting is a process whereby entries on alternate sides of the account for the same transaction item and same institutional unit are offset against one another. In general the preference in the sequence of economic accounts of the SNA is to avoid netting where

possible but this may not always be possible, and for some particular analyses not always desirable.

12.41 The degree of netting at which transactions in financial assets and liabilities should be recorded depends to a great extent on the analysis for which the data are to be used. In practice, the degree of netting will depend on how data can be reported, and reporting may vary substantially for different classes of institutional units. If detailed information on financial transactions is maintained and reported, gross presentations are possible; if transactions must be inferred from balance sheet data, a certain level of netting is inevitable. A number of degrees of netting can be identified:

a. no netting or fully gross reporting in which purchases and sales of assets are separately recorded, as are the incurrence and repayment of liabilities;

b. netting within a given specific asset, such as subtracting sales of bonds from acquisition of bonds and redemption of bonds from new incurrences of liabilities in the form of bonds;

c. netting within a given category of assets, such as subtracting all disposals of debt securities from all acquisitions of such assets;

d. netting transactions in liabilities against transactions in assets in the same asset category; and

e. netting transactions in groups of liability categories against transactions in assets in the same groups.

12.42 Transactions recorded in the financial account represent net acquisition of assets and net incurrence of liabilities. However, it is clear that, when data are collected on as gross a basis as possible, they can be netted to whatever degree is necessary for a particular use; when data are collected net, they cannot be grossed up. In general, netting beyond the level described in (c) above is discouraged as it hinders the usefulness of the financial accounts for tracing how the economy mobilizes resources from institutional units with positive net lending and transmits them to net borrowers. For detailed analysis of flows from creditors to debtors, gross reporting or netting at level (b) above is desirable, particularly for analysis of securities, but netting at level (c) above still provides useful information on financial flows.

Consolidation

12.43 Consolidation in the financial account refers to the process of offsetting transactions in assets for a given group of institutional units against the counterpart transactions in liabilities for the same group of institutional units. Consolidation can be performed at the level of the total economy, institutional sectors, and subsectors. Different levels of consolidation are appropriate for different types of analysis. For example, consolidation of the financial accounts for the total economy emphasizes the economy's financial position with the rest of the world since all domestic financial positions are netted on consolidation; as such, it would present the opposite view of the accounts of the rest of the world. Consolidation for sectors permits the tracing of overall financial movements between sectors with positive net lending and those with net borrowing and the identification of financial intermediation. Another area where consolidation can be instructive is within the general government sector when transactions between the various levels of government are consolidated. Chapter 30 on General government and the public sector makes a specific recommendation in this regard. Within the sequence of economic accounts, however, the SNA discourages consolidation.

C. Recording of individual financial instruments

1. Monetary gold and SDRs

12.44 Monetary gold and Special Drawing Rights (SDRs) issued by the International Monetary Fund (IMF) are assets that are normally held only by monetary authorities.

Monetary gold

12.45 ***Monetary gold (AF11) is gold to which the monetary authorities (or others who are subject to the effective control of the monetary authorities) have title and is held as a reserve asset. It comprises gold bullion***

(including gold held in allocated gold accounts) and unallocated gold accounts with non-residents that give title to claim the delivery of gold. All monetary gold is included in reserve assets or is held by international financial organizations. Only gold that is held as a financial asset as a component of international reserve assets is classified as monetary gold. Therefore, except in limited institutional circumstances, gold bullion can be a financial asset only for the central bank or central government. Transactions in monetary gold consist of sales and purchases of gold among monetary authorities. Purchases (sales) of monetary gold are recorded in the financial account of the domestic monetary authority as increases (decreases) in assets, and the counterpart monetary authority/international financial organisation are recorded as decreases (increases) in assets of the rest of the world (see paragraph 8.53 of *BPM7)*, or as increases (decreases) in liabilities of the rest of the world, if they correspond to transactions against the issuer of unallocated gold accounts. Transactions in non-monetary gold (including non-reserve gold held by the monetary authorities and all gold held by financial corporations other than the monetary authorities) are treated as acquisitions less disposals of valuables, if the sole purpose is to provide a store of wealth, and otherwise as final or intermediate consumption, change in inventories, exports or imports. Deposits, loans, and securities denominated in gold are treated as financial claims (not as gold) and are classified along with similar assets denominated in foreign currencies in the appropriate category. A discussion on the treatment of allocated and unallocated gold accounts appears under currency and deposits.

12.46 Monetary gold under reverse transactions, such as gold swaps, is collateralized and generally not readily available for balance of payments financing needs, because restrictions to a cash borrower's control of its gold collateral are imposed during the tenure of the swap agreement. Such collateralized amounts of monetary gold should be excluded from reserve assets and either demonetized (in the case of gold bullion) or reclassified as other investment, currency and deposits (in the case of unallocated gold accounts). (See chapter 6 of *BPM7* for additional details.)

12.47 Gold bullion in monetary gold takes the form of coins, ingots, or bars with a purity of at least 995 parts per thousand; it is usually traded on organized markets or through bilateral arrangements between central banks. Therefore, valuation of transactions is generally not a problem. Gold bullion held as a reserve asset is the only financial asset with no corresponding liability.

SDRs

12.48 ***Special Drawing Rights (SDRs) (AF12) are reserve assets created by the International Monetary Fund (IMF) and allocated to its members to supplement existing reserve assets.*** SDRs are held only by the monetary authorities of IMF members and a limited number of international financial institutions that are authorized holders.

12.49 Holdings of SDRs by an IMF member are recorded as a financial asset, while the allocation of SDRs is recorded as the incurrence of a liability of the member receiving them (because of a requirement to repay the allocation in certain circumstances, and also because interest accrues). The holdings and allocations should be shown gross, rather than net.

12.50 Domestic arrangements for holding SDRs and the accounting treatment may differ across IMF members according to differences in legal and institutional frameworks. The majority of members record the SDR positions on the central bank's balance sheet while some members record them on the balance sheet of a government agency. Regardless of where SDRs are recorded, the country's reserve assets increase with the allocation.

2. Currency and deposits

12.51 Financial transactions in currency and deposits consist of additions to, or disposals of, currency and establishing or incrementing a deposit or making a withdrawal from it. This category also includes crypto assets with a corresponding liability designed to act as a general medium of exchange. In the case of a deposit, an apparent increase in the value may be due to the payment of interest on an existing stock level. Payments of bank interest are always separated into SNA interest and a charge for implicit financial services on loans and deposits. SNA interest is first recorded in the earned income account and then may be recorded in the

financial account as a new deposit. An increase in deposits may correspond to a rundown of currency or vice versa.

12.52 Off-market central bank currency swap arrangements should be recorded as an exchange of deposits with maintenance of value. However, if the central banks conduct the transaction as a standard (market priced) currency swap, then it is recommended that the swap be recorded as an exchange of deposits with the simultaneous creation of a financial derivative, namely a forward-type contract (see paragraphs 6.107 to 6.111 of *BPM7* for additional details on central bank swap arrangements, and chapter 25 on Selected issues in financial instruments for the treatment of off-market swaps more generally).

12.53 The aggregate of currency, crypto assets with a corresponding liability designed to act as a general medium of exchange, transferable deposits (including inter-bank deposits) and other deposits should always be calculated. A distinction should preferably be made between currency and deposits in domestic currency and in foreign currency. If it is considered useful to have data for individual foreign currencies, a distinction should be made between currency and deposits in each currency.

Currency

12.54 ***Currency AF21) consists of notes and coins (including digital versions) that are of fixed nominal values and are issued or authorized by the central bank or government.*** Currency thus also includes digital currencies issued by the central bank or government. Commemorative coins that are not actually in circulation should be excluded as should unissued or demonetized currency. A distinction should be drawn between domestic currency (that is, currency that is the liability of resident units, such as the central bank, other banks and central government) and foreign currencies that are liabilities of non-resident units (such as foreign central banks, other banks and governments). All sectors may hold currency as assets, but normally only central banks and government may issue currency. In some countries, commercial banks are able to issue currency under the authorization of the central bank or government.

12.55 Notes and coins are treated as liabilities at full face value. The cost of producing the physical notes and coins is recorded as expenditures of the issuing authority and not netted against the receipts from issuing the currency.

Crypto assets with a corresponding liability designed to act as a general medium of exchange

12.56 This category includes crypto assets with a corresponding liability designed to act as a general medium of exchange that are not issued or authorized by the central bank or government. They consist of, for example, stablecoins with a claim on the issuer. Such stablecoins aim to maintain a stable value relative to a specified asset such as a fiat currency or gold, or a specified basket of assets, usually by being backed (or, at least, advertised as being backed) by the assets of the issuer. Similar assets designed to act as a medium of exchange within a platform are classified as debt securities. Another category of stablecoins (i.e., without a counterpart liability) concerns those that are backed by an algorithm. Such crypto assets without a corresponding liability designed to act as a medium of exchange are recorded as non-produced non-financial assets; see chapter 11 on Capital account.

Transferable deposits

12.57 ***Transferable deposits (AF23) comprise all deposits that:***

a. ***are exchangeable for bank notes and coins (including digital versions) on demand at par and without penalty or restriction; and***

b. ***are directly usable for making payments by cheque, draft, giro order, direct debit or credit, or other direct payment facility***.

Some types of deposit accounts embody only limited features of transferability; these are excluded from the

category of transferable deposits and treated as other deposits. For example, some deposits have restrictions such as on the number of third-party payments that can be made per period or on the minimum size of the individual third-party payments. A transferable deposit cannot have a negative value. A bank current or checking account, for example, is normally treated as a transferable deposit but if it is overdrawn, the withdrawal of funds to zero is treated as the withdrawal of a deposit and the amount of the overdraft is treated as the granting of a loan.

12.58 Transferable deposits also include electronic money or e-money issued by deposit-taking corporations. E-money is monetary value stored electronically, which represents a liability of the issuer and is denominated in a currency backed by an authority. E-money must represent general purchasing power, in the sense that it may be used for direct payments to third parties. For more details, reference is made to the *MFSMCG*.

12.59 Transferable deposits should preferably be cross-classified according to:

a. whether they are denominated in domestic currency or in foreign currencies; and

b. whether they are liabilities of resident institutional units or the rest of the world.

Inter-bank positions

12.60 Though not strictly accurate, the term bank is frequently used as a synonym for a deposit-taking corporation. Banks take deposits from and make loans to all other sectors. There may also be substantial borrowing and lending within the banking subsector, but this is of different economic significance from their intermediation activities involving other sectors. Chapter 37 on From-whom-to-whom tables and related financial indicators describes how a full analysis of the debtor and creditor sector for each instrument can be portrayed. Such an analysis is known as a detailed from-whom-to-whom table. However, not all countries are able to provide these tables on a timely basis.

12.61 Inter-bank positions can usually be identified and could usefully be recorded as a separate instrument category. This is one reason to consider separating inter-bank loans and deposits from other loans and deposits. A second reason concerns the calculation of the charge for implicit financial services on loans and deposits. This calculation depends on knowing the level of loans and deposits extended by banks to non-bank customers and calculating the difference between the interest the banks receive or pay and the interest when a reference rate is applied to the same levels of loans and deposits. In this respect, it can be noted that there is normally little if any implicit financial services on loans and deposits payable between banks as banks usually borrow from and lend to each other at a risk-free rate. For both these reasons, it should be possible to separate inter-bank loans and deposits from other loans and deposits

12.62 There may be cases where the instrument classification of inter-bank positions is unclear, for example because the parties are uncertain, or one party considers it as a loan and the other a deposit. As a convention to assure symmetry, such inter-bank positions other than securities and accounts receivable/payable, including the changes in these positions, are classified under deposits. Chapter 37 describes the detailed from-whom-to-whom tables which removes the need for identifying inter-bank deposits as a separate category.

Other deposits

12.63 ***Other deposits (AF29) comprise all claims other than transferable deposits, that are represented by evidence of deposit.*** Typical forms of deposits that should be included under this classification are savings deposits (which are always non-transferable), fixed-term deposits and non-negotiable certificates of deposit. The category also covers shares or similar evidence of deposit issued by savings and loan associations, building societies, credit unions and the like. Deposits of limited transferability that are excluded from the category of transferable deposits are included here. Claims on the IMF that are components of international reserves and are not evidenced by loans should be recorded in other deposits. (Claims on the IMF evidenced by loans should be included in loans; see paragraphs 5.48 and 5.58 of *BPM7* for further details on claims on the IMF included in other deposits and loans.)

12.64 Liabilities under reverse transactions (e.g., securities repurchase agreements, securities lending with cash

collateral, and gold swaps) are other deposits when incurred by a deposit-taking corporation and are included in loans when incurred by any other institution. Similarly, cash margins related to financial derivative contracts (described below) and reserves held by a factor in a factoring arrangement are classified as other deposits if they are liabilities of a deposit-taking corporation and in other accounts receivable/payable if they are liabilities of any other unit.

12.65 It is possible to hold accounts for both "allocated gold" and "unallocated gold". The distinction is precise, practical and recognized in the balance sheets of units holding these accounts. An allocated gold account gives full outright ownership of the gold and is equivalent to a custody record of title. The unallocated gold account does not give the holder the title to physical gold but provides a claim against the account operator to deliver gold. In effect, therefore, it is a deposit denominated in gold. They are thus treated as deposits in foreign currency. Accounts that are held for allocated gold, on the other hand, are treated as holdings of valuables. Both allocated and unallocated gold accounts are classified in reserve assets if they are held by monetary authorities, or other units authorized by them, and meet other criteria for reserve assets. The relevant unallocated gold account liabilities are classified as deposits. (See paragraphs 5.87 and 5.88 of *BPM7* for further details on allocated and unallocated gold accounts.)

12.66 Similar accounts, distinguishing between unallocated and allocated accounts for different precious metals, are also possible and should be treated in a similar way; those for unallocated metals are deposits in foreign currency, those for allocated accounts are holdings of valuables. If the practice of using commodities in this way extends beyond metals, it will be for consideration whether to extend this practice.

12.67 Transferable and other deposits may be held as assets by all sectors. Deposits are most often accepted as liabilities by financial corporations but institutional arrangements in some countries permit non-financial corporations, general government and households to accept deposits as liabilities.

12.68 Other deposits should preferably be cross-classified according to:

a. whether the deposits are denominated in domestic currency or in foreign currencies, and

b. whether they are liabilities of resident institutional units or the rest of the world.

3. Debt securities

12.69 ***Debt securities (AF3) are negotiable instruments serving as evidence of a debt. They include bills, bonds, notes, negotiable certificates of deposit, commercial paper, debentures, asset-backed securities and similar instruments normally traded in the financial markets. Bills are defined as securities (usually short-term) that give the holders the unconditional rights to receive stated fixed sums on a specified date***. Bills are issued and usually traded in organized markets at discounts to face value that depend on the rate of interest and the time to maturity. Examples of short-term securities are Treasury bills, negotiable certificates of deposit, bankers' acceptances and commercial paper. ***Bonds and debentures are debt securities that give the holders the unconditional right to fixed payments or contractually determined variable payments on a specified date or dates.*** Bonds and debentures also give holders the unconditional rights to fixed sums as payments to the creditor on a specified date or dates.

12.70 Utility tokens that provide the holders future access to goods or services should be classified as debt securities, as they imply a financial claim on the issuer (or another third party) and are negotiable by definition. The same holds for crypto assets with a corresponding liability designed to act as a medium of exchange within a platform. Because these payment tokens are quite different from traditional debt securities, it is recommended to record them in a separate subcategory (see paragraph 12.77). Debt tokens (i.e., debt instruments, such as corporate bonds, relying on cryptography) are also classified as debt securities.

12.71 Loans that have become negotiable from one holder to another are to be reclassified from loans to debt securities under certain circumstances. For such reclassification, there needs to be evidence of secondary market trading, including the existence of market makers, and frequent quotations of the instrument, such as provided by bid-offer spreads.

12.72 Non-participating preferred stocks or shares are those that pay a fixed income but do not provide for participation in the distribution of the residual value of an incorporated enterprise on dissolution. They are

repaid after standard debt and before equity in the order of repayment in case of bankruptcy. These shares are classified as debt securities. Bonds that are convertible into equity should also be classified in this category prior to the time that they are converted.

12.73 ***Asset-backed securities are debt securities created through securitization, whose payments of interest and principal are backed by payments on specified assets or income streams. Collateralized debt obligations are debt securities created through securitisation, whose payments of interest and principal are dependent on payments of a pool of loan and bond instruments, either purchased in the secondary market or from the balance sheet of a commercial bank.*** Securitization may also be used as a term to describe this process. Asset-backed securities may be issued by a specific holding unit or vehicle, which issues securities that are sold to raise funds to pay the originator for the underlying assets. Asset-backed securities are classified as debt securities because the security issuers have a requirement to make payments, while the holders do not have a residual claim on the underlying assets; if they did, the instrument would be equity or investment funds shares. Asset-backed securities are backed by various types of financial assets, for example, mortgages and credit card loans, non-financial assets, or by future income streams (such as the earnings of a musician or a government's future revenue) that are not recognized in themselves as an economic asset in macro-economic statistics.

12.74 ***Bankers' acceptances are negotiable orders (drafts or bills of exchange) to pay a specified amount of money on a future date, accepted and guaranteed by a financial corporation, in return for a fee.*** In contrast to acceptances more generally, a banker's acceptance must be tradable. Much international trade is financed this way. Bankers' acceptances are classified under the category of debt securities. The banker's acceptance represents an unconditional claim on the part of the holder and an unconditional liability on the part of the accepting financial corporation; the financial corporation's counterpart asset is a claim on its customer. Bankers' acceptances are treated as financial assets from the time of acceptance, even though funds may not be exchanged until a later stage.

12.75 ***Stripped securities are securities that have been transformed from a principal amount with coupon payments into a series of zero-coupon bonds, with a range of maturities matching the coupon payment date(s) and the redemption date of the principal amount(s)***. The function of stripping is that investor preferences for particular cash flows can be met in ways different from the mix of cash flows of the original security. Stripped securities may have an issuer different from the original issuer; in which instance, new liabilities are created. There are two cases of stripped securities:

a. When a third party acquires the original securities and uses them to back the issue of the stripped securities. Then new funds have been raised and there is a new financial instrument.

b. When no new funds are raised and the payments on the original securities are stripped and marketed separately by the issuer or through agents (such as strip dealers) acting with the issuer's consent.

12.76 ***Index-linked securities are financial instruments for which either the coupon payments (interest) or the principal or both are linked to another item such as a price index, an interest rate or the price of a commodity.*** The objective is to conserve purchasing power or wealth during a period of inflation in addition to earning interest income. When the coupon payments are index-linked they are treated entirely as interest, as is the case with any variable interest rate financial asset. When the value of the principal is indexed to an indicator that moves in line with a broad-based measure of inflation, the issue price of the security is recorded as the principal and the index payment paid periodically and at maturity is treated as interest. The payment owing to indexation should be recorded as interest (property income) over the life of the security and the counterpart should be recorded under debt securities in the financial account. When a security is indexed to a commodity and thus may be subject to large price fluctuations, a variation on this procedure is recommended. It is explained in detail in chapter 25 on Selected issues in financial instruments.

Supplementary classifications of debt securities

12.77 It is recommended to compile the following breakdown of debt securities:

a. Short-term debt securities (AF31) include those securities that have an original maturity of one year or less. Securities with a maturity of one year or less should be classified as short-term even if they

are issued under long-term facilities such as note issuing facilities.

b. Long-term debt securities (AF32) include those securities that have an original maturity of more than one year. Claims with optional maturity dates, the latest of which is more than one year away, and claims with indefinite maturity dates should be classified as long-term.

c. Crypto assets with a corresponding liability designed to act as a medium of exchange within a platform, short-term (AF33).

d. Crypto assets with a corresponding liability designed to act as a medium of exchange within a platform, long-term (AF34).

e. Utility tokens (AF35).

In addition, it may sometimes be useful to distinguish listed debt securities from unlisted ones and to record them according to whether they are short-term or long-term. It may also be useful to distinguish securities with an original maturity of more than one year, whose remaining maturity is less than one year.

4. Loans

12.78 ***Loans (AF4) are financial assets that:***

a. ***are created when a creditor lends funds directly to a debtor, and***

b. ***are evidenced by documents that are not negotiable.***

12.79 The category of loans includes overdrafts, instalment loans, hire-purchase credit and loans to finance trade credit, including factoring claims. Peer-to-peer lending through digital platforms, which facilitate lending of money from individuals and other lenders, often unsecured, to unrelated individuals or small businesses, thereby circumventing traditional financial intermediaries, are also considered as loans. Claims on or liabilities to the IMF that are in the form of loans are also included. An overdraft arising from the overdraft facility of a transferable deposit account is classified as a loan. However, undrawn lines of credit are not recognized as a liability as they are contingent. Securities, repurchase agreements, gold swaps and financing by means of a financial lease may also be classified as loans. However, accounts receivable/payable, which are treated as a separate category of financial assets, and loans that have become debt securities are excluded from loans.

12.80 ***Securities repurchase agreements (repos) are contractual arrangement involving the sale of securities in exchange for cash, at a specified price, with a commitment to repurchase the same or similar securities at a fixed price either on a specified future date or with an "open" maturity.*** Securities lending with cash collateral and sale/buy-backs are economically the same as a repurchase agreement; all involve the provision of securities as collateral for a loan or deposit. It is called a repo from the perspective of the security provider and a reverse repo from the perspective of the security taker.

12.81 The supply and receipt of funds under a securities repurchase agreement, including the supply and receipt of margin calls in cash, is treated as a loan or a deposit. It is generally a loan, but is classified as a deposit if it involves liabilities of a deposit-taking corporation. If a securities repurchase agreement does not involve the supply of cash (i.e., there is an exchange of one security for another, or one party supplies a security without collateral), there is no loan or deposit.

12.82 The securities provided as collateral under securities lending, including a securities repurchase agreement, are treated as not having changed economic ownership. This treatment is adopted because the cash receiver is still subject to the risks or benefits of any change in the price of the security.

12.83 The party that acquires securities under a repurchase agreement or security lending (borrowing) can on-sell the securities due to the change in legal ownership of the securities). This on-selling of the securities is recorded as a negative asset, to avoid the double-counting of the security by both the economic (original) owner and the final owner.

12.84 ***Gold swaps are arrangements that involve the exchange of gold for foreign exchange with an agreement that the transaction be reversed at an agreed future date at an agreed gold price***. The gold should not be

recorded on the balance sheet of the gold taker (cash provider), while the gold should also not be removed from the balance sheet of the gold provider (cash taker). In this manner, the transaction is analogous to a repurchase agreement and should be recorded as a collateralized loan or deposit. Gold swaps are similar to securities repurchase agreements except that the collateral is gold.

12.85 Reverse transactions that involve commodities (or potentially other non-financial assets) are recorded in the same way as the above reverse transactions for securities and gold.

12.86 When goods are acquired under a financial lease, a change of economic ownership of the goods from the lessor to the lessee is deemed to take place. The change of economic ownership may be distinguished by the fact that all the risks and rewards of ownership are transferred from the legal owner of the good, the lessor, to the user of the good, the lessee. The lessee contracts to make payments that enable the lessor, over the period of the contract, to recover all, or virtually all, of his costs including interest. This de facto change in ownership is recorded by assuming a loan is made by the lessor to the lessee, the lessee uses this loan to acquire the asset and the payments by the lessee to the lessor represent not rentals on the asset but payments of interest, possibly a service charge and repayments of principal on the imputed loan. Interest is recorded as property income payable or receivable and debt repayment is recorded in the financial account as reducing the value of the asset (loan) of the lessor and the liability of the lessee. There is more extensive discussion of financial leases in chapter 27 on Contracts, leases, licenses and permits.

12.87 ***Factoring is a transaction in which a financial corporation (factor, which can be a bank, a specialized factoring company or other financial organization) buys trade accounts receivable from a supplier of goods and services at a discount. Two basic types of factoring are differentiated: recourse and non-recourse factoring. In non-recourse factoring, the factor assumes the full risk of non-payment by the debtors at maturity and therefore charges the supplier a higher percentage of the receivables ("discount") than in recourse factoring where all or part of the risk is kept by the supplier (recourse factoring).*** Factoring is commonly viewed as a purchase or sale of invoices transferring the legal right of the claim on the debtor to the factor. In factoring, the indirect financing by the factor to the debtor is treated as a loan. The instrument reclassification from trade credit to a loan should be recorded as a transaction in the financial account. The accounts receivable concerned are trade-related receivables arising from the provision of goods, services, or work-in-progress. The factor may also keep a reserve that should be paid back to the supplier once the debtor pays its liability in full. The recourse is seen as a guarantee treated as a contingent liability for the supplier, which should therefore not be recorded unless and until being activated by the factor. The reserve held by a factor is classified as a deposit (if it is a liability of a deposit-taking corporation), or other accounts receivable/payable, following the recording of cash margins for financial derivatives. The factoring income is treated as a fee paid by the supplier; see paragraph 7.195.

Supplementary classifications of loans

12.88 Loans may be divided, on a supplementary basis, between short-term and long-term loans.

a. Short-term loans comprise loans that have an original maturity of one year or less. Loans repayable on the demand of the creditor should be classified as short-term even when these loans are expected to be outstanding for more than one year.

b. Long-term loans comprise loans that have an original maturity of more than one year.

12.89 It may also be useful to distinguish loans that, though taken out for a period longer than a year, have less than one year to maturity in the accounting period considered, as well as loans secured by mortgages.

5. Equity and investment fund shares/units

12.90 Equity and investment fund shares/units have the distinguishing feature that the holders own a residual claim on the assets of the institutional unit that issued the instrument. Equity represents the owner's funds in the institutional unit. In contrast to debt, equity does not generally provide the owner with a right to a predetermined amount or an amount determined according to a fixed formula.

12.91 Investment fund shares/units have a specialized role in financial intermediation as a kind of collective

investment in other assets, so they are identified separately.

Equity

12.92 ***Equity (AF51) comprises all instruments and records acknowledging ownership rights and claims on the residual value of a corporation or quasi-corporation after the claims of all creditors have been met. Ownership of equity is usually evidenced by shares, stocks, participations, depository receipts or similar documents.*** Equity is treated as a liability of the issuing institutional unit.

12.93 Although ownership of equity in legal entities is usually evidenced by shares, stocks, depository receipts, participations, or similar documents, they may also take the form of equity crypto assets, which are similar to standard equity albeit relying on cryptography for being created, allocated, transferred and managed. Shares and stocks have the same meaning, while depository receipts are securities that facilitate ownership of securities listed in other economies; a depository issues receipts listed on one exchange that represent ownership of securities listed on another exchange. Participating preferred shares are those that provide for participation in the residual value on the dissolution of an incorporated enterprise. Such shares are also equity securities, whether or not the income is fixed or determined according to a formula. (Non-participating preferred shares are treated as debt securities as explained above.)

12.94 Subscription rights are the rights of corporate shareholders to participate in the acquisition of shares newly issued by the corporation. Subscription rights are designed to offset any potential dilution effect in the value of the stake of current shareholders resulting from the terms of issuance: by exercising the rights, the investor maintains their percentage of ownership in the corporation buying a proportionate number of shares of the issuance. Despite their expiry date, subscription rights are classified as equity, as they represent part of the own funds of the corporation.

12.95 Equities are subdivided into:

a. listed shares;

b. unlisted shares; and

c. other equity and equity in international organisations.

Both listed and unlisted shares are negotiable and are therefore equity securities.

12.96 ***Listed shares (AF511) are equity securities listed on an exchange (also known as quoted shares).*** The existence of quoted prices of shares listed on an exchange means that current market prices are usually readily available.

12.97 ***Unlisted shares (AF512) are equity securities that are not listed on an exchange (also known as unquoted shares).*** Unlisted shares can also be called private equity; venture capital usually takes this form. Unlisted shares tend to be issued by subsidiaries and smaller scale enterprises and typically have different regulatory requirements but neither qualification is necessarily the case.

12.98 ***Other equity and equity in international organisations (AF519) consists of all forms of equity other than listed and unlisted shares. In the case of equity in international organizations, it also includes non-tradable shares.*** It can include equity in quasi-corporations (such as branches, trusts, limited liability and other partnerships), unincorporated funds and notional units for ownership of real estate and other natural resources. The equity ownership of many international organizations (e.g., ownership of currency union central banks) is usually not in the form of tradable shares and so is classified in this item. Although equity in some international organizations, such as the Bank for International Settlements (BIS), is in the form of unlisted shares, the equity is not tradable by member countries; therefore, it should also be classified in this item.

12.99 Transactions in equity in the financial account cover three different types of transactions. The first is the recording of the value of shares bought and sold. From time to time corporations restructure their shares and may offer shareholders a new number of shares for each share previously held. These bonus shares, which are different from subscription rights (see above), are not however treated as transactions but as a form of redenomination since the value of the new number of shares times the new price represents the same

proportion of the value of the corporation as the old number of shares times the old price.

12.100 The second type of transaction concerning equity is capital injections by the owners or, on occasion, withdrawals of equity by the owners. Dividends are recorded in the allocation of earned income account as if they were always paid out of operating surplus earned in the current period. An enterprise, though, usually aims to have a smooth track record of dividend payments and will therefore sometimes pay out more than the net earnings from current production, property income (excluding distributed income in the form of dividends) and transfer income transactions, and sometimes rather less, the balance carrying through to the accumulation accounts by way of saving (which might be negative). However, if the dividends paid out are significantly in excess of operational profits excluding holding gains and losses, then the excess should no longer all be recorded in the allocation of earned income account but should be recorded as a financial transaction (withdrawal of equity) by the owners akin to the partial liquidation of the enterprise. Such payments are sometimes referred to as "super dividends" (see paragraph 8.137 to 8.139). Withdrawals may take the form of proceeds from sales of fixed or other assets, transfers of fixed and other assets from the quasi-corporation to the owner and funds taken from accumulated retained earnings and reserves for depreciation. In the case of foreign direct investment relationships, the treatment of these exceptional payments as withdrawals of equity is restricted to those related to non-operating activities (sales of assets, liquidations of branches). For domestic direct investment relationships, such as government controlled public corporations, super dividends may also concern payments out of reserves accumulated in past periods. (The particular case of payments between government and public corporations is discussed in chapter 30 on General government and the public sector.) Equally, liquidating dividends paid to shareholders when an enterprise becomes bankrupt should be recorded as withdrawal of equity.

12.101 Conversely, owners may inject extra finance into an enterprise. If the enterprise is publicly controlled and runs a regular deficit each year as a matter of government economic or social policy that is covered by a receipt from government to match this deficit, the payment is regarded as a subsidy. If the payment from government is irregular but clearly designed to cover accumulated losses, it is treated as a capital transfer. If government makes an investment grant to a public corporation this also is recorded as a capital transfer. However, there may be cases where the owners (public or private) agree to make new finance available to permit expansion, say, and represent not just a reduction of debt but a positive addition to the enterprise's own funds. The finance consists of funds for use by the enterprise in purchasing fixed assets, accumulating inventories, acquiring financial assets or redeeming liabilities. Transfers by owners of fixed and other assets to the quasi-corporation are also included as addition to equity. Such payments are to be included in this item as an acquisition of equity, even if no new shares are issued in response to the financial contribution.

12.102 The third type of transaction concerning equity is the special case of equity addition and withdrawal that happens in respect of the reinvestment of earnings of foreign direct investment enterprises. In the earned income account, some or all of the retained earnings (i.e., net earnings from current production, property and transfer income transactions that have not been distributed) of these enterprises is shown as being distributed to the foreign direct investor as property income; see paragraphs 8.143 to 8.146. Because it is not actually withdrawn, it adds to the value of the equity of the enterprise by a recording as reinvestment of earnings in the financial account.

12.103 Notional resident units are treated in the same manner as quasi-corporations. For example, an extension to a holiday home of a non-resident is recorded as an increase in the value of an asset owned by a resident notional unit with a matching increase in the equity of the non-resident owner. However, the entire income from a holiday home, after deduction of related production costs, is treated as a withdrawal by the owner of the notional resident unit so there are no earnings left to be reinvested. This ensures that the entire net worth of the notional resident unit is the value of the property in question.

Investment fund shares or units

12.104 ***Investment funds are collective investment undertakings through which investors pool funds for investment in financial or non-financial assets or both. Investment funds include money market funds (MMF) and non-MMF investment funds.*** Those units acquiring shares in the funds thus spread their risk across all the instruments in the fund.

12.105 In a detailed from-whom-to-whom table, the acquisition of instruments by the investment funds is shown separately from the acquisition of shares in the funds and a full analysis of the from-whom-to-whom transactions captures the holdings of instruments via investment funds without needing to have a separate category for it. However, as noted in connection with the category of inter-bank positions, timely from-whom-to-whom tables are not always available. Therefore, in order to distinguish when institutional units acquire instruments such as securities and equities directly and when they are acquired via investment funds, the latter are shown separately.

12.106 Investment funds include mutual funds and unit trusts. Investment funds issue shares when a corporate structure is used and units when a trust structure is used. Investment fund shares refer to the shares issued by mutual funds, rather than the shares the mutual fund may hold.

12.107 Investment funds are divided into money market funds (MMFs) and non-MMF investment funds. The fundamental difference between them is that MMFs typically invest in money market instruments with an original maturity of less than one year, and are often regarded as close substitutes for deposits. Non-MMF investment funds typically invest in longer-term financial assets or certain non-financial assets. They are typically not regarded as substitutes for deposits.

12.108 The increase in value of investment fund shares or units other than from holding gains and losses is shown in the SNA sequence of economic accounts as distributed to the share or unit holders and reinvested by them in the financial account, after deduction of all implicit and explicit charges for management and operating costs.

Money market fund shares or units

12.109 ***Money market funds (S1223) are collective investment schemes that raise funds by issuing shares or units to the public, and primarily investing in money market instruments, money market fund shares or units, transferable debt instruments with a residual maturity of not more than one year, bank deposits, and instruments that pursue a rate of return that approaches the interest rates of money market instruments.*** Money market fund shares or units sometimes are functionally close to transferable deposits, for example, accounts with unrestricted cheque-writing privileges. If these fund shares are included in broad money in the reporting economy, they should be recorded as a separate item to allow reconciliation with monetary statistics. ***Money market fund shares or units (AF521) are shares or units issued by money market funds that represent claims on part of the value of an established money market fund.***

Non-MMF investment fund shares or units

12.110 ***Non-MMF investment fund shares or units (AF522) are shares or units issued by non-money market funds that represent a claim on part of the value of an established non-money market investment fund.***

Supplementary classifications of investment fund shares or units

12.111 It may be useful to distinguish listed from unlisted investment fund shares or units.

12.112 Investment funds invest in a range of assets including debt securities, equity, commodity-linked investments, shares in other investment funds and structured assets as well as non-financial assets. (See paragraphs 5.155 to 5.165 for more information on the delineation of investment funds.) Data on the composition of their assets could be useful in economies where investment funds are significant. See chapter 29 on Financial corporations for more details.

6. Insurance, pension and standardized guarantee schemes

12.113 Insurance, pension and standardized guarantee schemes all function as a form of redistribution of income or wealth mediated by financial corporations. The redistribution may be between individual institutional units in the same period or for the same institutional unit over different periods or a combination of the two. Units

participating in the schemes contribute to them and may receive benefits (or have claims settled) in the same or later periods. While they hold the funds, insurance corporations invest them on behalf of the participants. The part of the investment income that is distributed to the participants as property income is returned as extra contributions. In all cases, contributions or premiums less service charges are defined as actual contributions or premiums plus distributed property income less the service charge retained by the financial corporation concerned. Entries in the financial account, therefore, reflect the difference between contributions or premiums less service charges paid to the schemes less benefits and claims paid out. Significant other additions to the reserves of the schemes come via other changes in the volume of assets and especially holding gains. There is more extensive discussion on the recording of all these schemes in chapter 24 on Insurance and pensions and chapter 25 on Selected issues in financial instruments.

12.114 There are six sorts of reserves applicable to insurance, pension and standardized guarantee schemes. These are non-life insurance technical reserves, life insurance and annuity entitlements, pension entitlements, claims of pension funds on pension sponsors, entitlements to non-pension benefits and provisions for calls under standardized guarantees.

Non-life insurance technical reserves

12.115 ***Non-life insurance technical reserves (AF61) are reserves related to non-life insurance (and reinsurance) consisting of prepayments of non-life insurance premiums less service charges and reserves to meet outstanding non-life insurance claims.*** They consist of actual premiums paid but not yet earned (called unearned actual premiums) and claims due but not yet settled, including cases where the amount is in dispute or the event leading to the claim has occurred but has not yet been reported (called claims outstanding). The only transactions for non-life insurance technical reserves recorded in the financial account are accrual adjustments. In this respect, refunded premiums at surrender of an insurance policy should be recorded as a financial transaction (i.e., a decrease of insurance technical reserves).

Life insurance and annuity entitlements

12.116 ***Life insurance and annuity entitlements (AF62) are defined as the financial claims of policyholders against an institutional unit offering life insurance or providing annuities.*** The only transaction for life insurance and annuity entitlements recorded in the financial account is the difference between premiums less service charges receivable and benefits payable.

Pension entitlements

12.117 ***Pension entitlements (AF63) typically concern financial claims that both existing and future pensioners hold against either their employer, a fund designated by the employer to pay pensions earned as part of a compensation agreement between the employer and employee, or a specific collective fund established for self-employed persons.*** As noted, they may also relate to collective arrangements established for selected groups of self-employed persons, albeit only if certain conditions are met. (See chapter 24 on Insurance and pensions for more details.) The only transaction for pension entitlements recorded in the financial account is the difference between contributions less service changes receivable and benefits payable. The increase in pension entitlements shown in the financial account is equal to the entry in the use of income accounts for the change in pension entitlements plus the changes in entitlements as a result of negotiations about the terms (see paragraph 24.168) plus any transfer of entitlements from a previous pension sponsor.

Claims of pension funds on pension sponsors

12.118 An employer may contract with a third party to administer the pension funds for his employees. If the employer continues to determine the terms of the pension schemes and retains the responsibility for any deficit in funding as well as the right to retain any excess funding, the employer is described as the pension sponsor, and the unit working under the direction of the pension sponsor is described as the pension

administrator. If the agreement between the employer and the third party is such that the employer passes the risks and responsibilities for any deficit in funding to the third party in return for the right of the third party to retain any excess, the third party becomes the pension sponsor as well as the administrator.

12.119 When the pension sponsor is a unit different from the administrator, with the consequences that responsibility for any deficit, or claims on any excess, rest with the pension sponsor, the claim of the pension fund on the pension sponsor is shown under this heading. The entry is negative if the pension fund makes more investment income from the pension entitlements it holds than is necessary to cover the increase in entitlements and the difference is payable to the pension sponsor of the scheme. The deficit, or claim on any excess, may be also be affected by negotiated changes in the terms of the entitlements; see paragraph 24.168.

Entitlements to non-pension social insurance benefits

12.120 Funded schemes for social insurance benefits other than pensions are not very common. They may, however, exist in two circumstances. The first is when an employer has a fund for such benefits and accumulates any underspend in one year to pay for possible overspends in future years. Alternatively, an employer may realise that the commitments to make payments in future are such that it is prudent to build reserves to be able to make such payments. An example of such a scheme might be one that provides health cover, invalidity or other (non-longevity) risks to present and past employees. Unlike in the case of pensions, estimates of possible future claims on social insurance benefits other than pensions are generally not included in the sequence of economic accounts of the SNA. Liabilities are recorded only when and to the extent that they exist in the employer's accounts.

Provisions for calls under standardized guarantees

12.121 ***Provisions for calls under standardized guarantees (AF66) consist of prepayments of fees less service charges and provisions to meet the expected calls under outstanding standardized guarantees.*** The transactions for provisions for calls under standardized guarantee schemes recorded in the financial account are similar to those recorded in the case of technical reserves for non-life insurance; they include unearned fees and calls not yet settled.

7. Financial derivatives and employee stock options

Financial derivatives

12.122 ***Financial derivatives*** (AF71) ***are negotiable financial instruments linked to another specific financial instrument, indicator or commodity, through which specific financial risks (e.g., interest rate risk, foreign exchange risk, equity and commodity price risk, credit risk) can be traded in their own right in financial markets.*** The value of a financial derivative derives from the price of the underlying item: the reference price. The reference price may relate to a commodity, a financial asset, an interest rate, an exchange rate, another derivative or a spread between two prices. The derivative contract may also refer to an index or a basket of prices. Financial derivatives also include derivative crypto assets (i.e., derivative contracts that rely on cryptography and that can be exchanged peer-to-peer even if the underlying asset is not a crypto asset).

12.123 An observable market price or an index for the underlying item is essential for calculating the value of any financial derivative. If a financial derivative cannot be valued because a prevailing market price or index for the underlying item is not available, it cannot be regarded as a financial asset. Unlike debt instruments, no principal amount is advanced to be repaid and no investment income accrues. Financial derivatives are used for a number of purposes including risk management, hedging, arbitrage between markets and speculation. Financial derivatives enable parties to trade specific financial risks (interest rate risk, currency, equity and commodity price risk and credit risk, etc.) to other units who are more willing, or better suited, to take or manage these risks, typically, but not always, without trading in a primary asset or commodity. The risk embodied in a derivatives contract can be "traded" either by trading the contract itself, such as is possible with options, or by creating a new contract that embodies risk characteristics that match, in a countervailing manner, those of the existing contract owned. The latter is termed offsetability and is particularly common

in forward markets or where there are no formal exchanges through which to trade derivatives.

12.124 Financial derivative instruments that can be valued separately from the underlying item to which they are linked should be treated as financial assets, regardless of whether "trading" occurs on- or off-exchange. Transactions in financial derivatives should be treated as separate transactions, rather than as integral parts of the value of underlying transactions to which they may be linked. The two parties to the derivatives may have different motives for entering into the transaction. One may be hedging, while the other may be dealing in derivative instruments or acquiring the derivative as an investment. Even if both parties are hedging, they may be hedging transactions or risks that involve different financial assets or even transactions in different accounts. Therefore, if derivative transactions were treated as integral parts of other transactions, such treatment would lead to asymmetries of measurement in different parts of the accounts or to asymmetries of measurement between institutional sectors.

12.125 Any commissions paid to or received from brokers or other intermediaries for arranging options, futures, swaps and other derivatives contracts are treated as payments for services in the appropriate accounts. Financial derivatives transactions may take place between two parties directly, or through an intermediary. In the latter case, implicit or explicit service charges may be involved. However, it is usually not possible to distinguish the implicit service element. Net settlement payments under derivative contracts are therefore recorded as financial transactions. However, where possible, the service charge component should be separately recorded. Financial derivatives contracts are usually settled by net payments of cash. This often occurs before maturity for exchange-traded contracts such as commodity futures. Cash settlement is a logical consequence of the use of financial derivatives to trade risk independently of ownership of an underlying item. However, some financial derivative contracts, particularly involving foreign currency, are associated with transactions in the underlying item. A transaction in an asset underlying a financial derivative contract that goes to delivery should be recorded at the prevailing market price for the asset with the difference between the prevailing price and the price actually paid (times the quantity of the asset) recorded as a transaction in financial derivatives.

12.126 There are two broad classes of financial derivatives: option-type contracts (options) and forward-type contracts (forwards, futures and swaps). Option-type contracts entail two payment streams, a "premium leg", comprising of fixed payments from the buyer to the seller, and a "contingent leg", comprising payments from the seller to the buyer depending on the underlying asset's pricing, whereas forward-type contacts entail contingent payments between the parties involved depending on the underlying asset's pricing. The contingent leg in an option-type contract usually entails a single payment at maturity; the premium leg in standard put and call options consists in a single payment at inception.

12.127 Option-type contracts can be contrasted with forward-type contracts in that:

a. at inception, there is usually no up-front payment for a forward-type contract and the derivative contract begins with zero value, whereas there is usually a premium paid for an option-type contract representing a non-zero value for the contract;

b. during the life of the contract, for a forward-type contract, either party can be creditor or debtor, and it may change, whereas for an option-type contract, the buyer is always the creditor and the writer is always the debtor except for contracts with multiple payments in the premium leg like credit default swaps; and

c. at maturity, redemption is unconditional for forward-type contracts, whereas for standard call and put option contracts it is determined by the buyer of the contract.

Option-type contracts (options)

12.128 ***Options (AF71S11) are contracts that give the purchaser of the option the right but not the obligation to buy (a "call" option) or to sell (a "put" option) a particular financial or non-financial item at a predetermined price (the "strike" price), either within a given time span (American option) or on a given date (European option).*** Many options contracts, if exercised, are settled by a cash payment rather than by delivery of the underlying items to which the contract relates. Options are sold or "written" on many types of underlying items such as equities, interest rates, foreign currencies, commodities and specified indices.

The buyer of the option pays a premium (the option price) to the seller for the latter's commitment to sell or purchase the specified amount of the underlying financial or non-financial item on demand of the buyer. While the premium paid to the seller of the option can conceptually be considered to include a service charge, in practice, it is usually not possible to distinguish the service element. The full price should be recorded as acquisition of a financial asset by the buyer and as incurrence of a liability by the seller. However, where possible, the service charge component should be separately recorded.

12.129 The value of an option at inception should be recorded at the full price of the premium. Sometimes a premium is paid after the inception of the contract. In that case, the value of the premium is recorded at the inception of the contract in the same manner as if it had been paid then, but is shown as being financed by accounts receivable/payable between the writer and the purchaser. Subsequent purchases and sales of options are also to be recorded in the financial account. If an option based on a financial asset is exercised or if an option based on a non-financial item proceeds to delivery, the acquisition or sale of the underlying item should be recorded at the prevailing market price in the appropriate accounts with the difference between this amount and the amount actually paid recorded as transactions in financial derivatives.

12.130 Warrants are a form of options that are treated in the financial account in the same way as other options. ***Warrants are tradable instruments which give the holder the right but not the obligation to buy from or sell to the issuer of the warrant a fixed amount of an underlying asset, such as shares or bonds. Although similar to other traded options, a distinguishing factor is that the exercise of the warrants can create new securities, thus diluting the capital of existing bond- or shareholders.*** There are also currency warrants based on the amount of one currency required to buy another and cross-currency warrants tied to third currencies. They can be traded apart from the underlying securities to which they are linked and therefore have a market value. The issuer of the warrant incurs a liability, which is the counterpart of the asset held by the purchaser.

Forward-type contracts

12.131 ***Forward-type contracts consist of forward contracts, futures and swaps. Forward contracts (AF71S12) are unconditional contracts by which two counterparties agree to buy or sell a specified quantity of an underlying item (financial or non-financial) at an agreed-upon contract price (the strike price) on a specified date. Forward contracts are traded over-the-counter. Futures (AF71S13) are forward-type contracts traded on organized exchanges, typically settled by the payment of cash rather than the delivery of the underlying asset, and are valued and traded separately from the underlying item***. Forward contracts and futures, are unconditional financial contracts that represent an obligation for settlement on a specified date. Forward contracts and futures are typically, but not always, settled by the payment of cash or the provision of some other financial instrument rather than the actual delivery of the underlying item and therefore are valued and traded separately from the underlying item. At the inception of the contract, risk exposures of equal market value are exchanged and hence the contract has zero value. Some time must elapse for the market value of each party's risk to differ so that an asset (creditor) position is created for one party and a liability (debtor) position for the other. The debtor/creditor relationship may change both in magnitude and direction during the life of the forward contract.

12.132 Common forward-type contracts include interest rate swaps, forward rate agreements (FRA), foreign currency swaps, foreign currency forwards and cross-currency interest rate swaps.

a. ***Interest rate swaps are contracts that involve an exchange of cash flows related to interest payments, or receipts, on a notional amount of principal, which is never exchanged, in one currency over a period of time.*** Settlements are often made through net cash payments by one counterparty to the other.

b. ***Forward rate agreements (FRAs) are arrangements in which two parties agree on an interest rate to be paid, at a specified settlement date, on a notional amount of principal that is never exchanged***. FRAs are settled by net cash payments. The only payment that takes place is related to the difference between the agreed forward rate agreement rate and the prevailing market rate at the time of settlement.

c. ***Foreign currency swaps are arrangements that involve the spot sale/purchase of currencies with***

a simultaneous forward purchase/sale of the same currencies.

d. ***Foreign currency forwards are contracts where two counterparties agree to transact in foreign currencies at an agreed exchange rate in a specified amount at an agreed future date.***

e. ***Cross-currency interest rate swaps, sometimes known as currency swaps, are contracts that involve an exchange of cash flows related to interest payments and an exchange of principal amounts at an agreed exchange rate at the end of the contract.***

12.133 When a contract requires ongoing servicing (such as payments in an interest rate swap) and a cash payment is received, there is a decrease (increase) in a financial derivative asset (liability) if, at the time of the payment, the contract is in an asset (liability) position. If compilers are unable to implement this approach because of market practice, all cash receipts should be recorded as reductions in financial assets, and all cash payments should be recorded as decreases in liabilities.

12.134 For financial derivative contracts involving foreign currency, such as currency swaps, it is necessary to distinguish between a transaction in a financial derivative contract and transactions in the underlying currencies. At inception, the parties' exchange of the underlying financial instruments is usually classified under deposits. At the time of settlement, the difference in the values, as measured in the unit of account at the prevailing exchange rate, of the currencies swapped are allocated to a transaction in a financial derivative, with the values swapped recorded in the relevant other item.

Novation and portfolio compression

12.135 Two further activities worth noting in relation to financial derivatives are novation and portfolio compression Novation is the replacement of an existing bilateral obligation with two new ones. For financial derivatives, this is where a bilateral contract between two parties is replaced by two bilateral contracts between each of the original parties and a clearinghouse. One advantage of novation is that the clearinghouse middleman assumes the counterparty risk. Novation can also take place without a clearinghouse, where one participant transfers a contract to another party. The total value of derivative contracts increases with a novation activity because there is an additional contract involving a third party. Transactions are also recorded at the time of the activity but, for the original parties, extinguishing of the first contract is offset by a new contract with the same value. For the third party, whether a clearinghouse or not, new transactions are recorded.

12.136 On the other hand, portfolio compression is the process of replacing a number of derivative contracts among participants with fewer new contracts. This, in turn, reduces the value of the overall investment, while maintaining the same risk and on a net basis. Net positions are also unchanged, although gross positions can be different. This process reduces both the total number of contracts in place and the aggregate notional values at risk. Portfolio compression can take place among two or more parties. Compression also results in transactions at the time of the activity by terminating the existing contracts and creating new contracts, sometimes with different counterparties.

Credit derivatives

12.137 The financial derivatives described in the previous paragraphs are related to market risk, which pertains to changes in the market prices of securities, commodities, interest and exchange rates. ***Credit derivatives (AF715) are financial derivatives whose primary purpose is to trade credit risk.*** They are designed for trading in loan and security default risk. Under a credit default swap, premiums are paid in return for a cash payment in the event of a default by the debtor of the underlying instrument. Credit derivatives take the form of both forward-type and option-type contracts and like other financial derivatives, they are frequently drawn up under standard master legal agreements and involve collateral and margining procedures, which allow for a means to make a market valuation.

Margins

12.138 Margin are collateral provided to cover potential obligations. The required provision of margin reflects

market concern over counterparty risk and is standard in financial derivative markets, especially for futures and exchange-traded options. Ownership of the margin remains with the unit that provided it. Cash margins for financial derivatives are classified as deposits (if they are liabilities of deposit-taking corporations), or other accounts receivable/payable. When a margin is placed in a non-cash asset (such as securities), no transaction is recorded because no change in economic ownership has occurred. In organised exchanges and clearing houses, margins are increased or decreased as a result of settling profits/losses of the derivative contracts by marking them to market value often on a daily or intraday basis; they are recorded as an increase or decrease in deposits (if they are liabilities of a deposit-taking corporation), or other accounts receivable/payable with a corresponding entry in a decrease in financial derivative assets or liabilities. If the margin falls short of a required level (often called a maintenance margin), an additional margin must be posted to meet the requirement; this payment is not to settle a financial derivative contract and should not be recorded in financial derivatives. These principles for classifying cash margins for financial derivatives as deposits or other accounts receivable/payable apply generally to all types of cash collateral, except those for reverse transactions (which are recorded as loans or deposits).

12.139 Financial derivatives should be broken down by type of market risk, as follows:

- foreign currency derivatives;
- single currency interest rate derivatives;
- equity derivatives;
- commodity derivatives;
- credit derivatives; and
- other derivatives.

12.140 In addition, the following breakdowns are encouraged as supplementary items:

- By instrument, as follows:
  - options;
  - forwards and related instruments (other than futures and swaps);
  - futures;
  - swaps;
  - credit derivatives; and
  - other and hybrid derivatives
- By trading venue, as follows:
  - exchange-traded derivatives;
  - over-the-counter derivatives (cleared); and
  - over-the-counter derivatives (not cleared).

12.141 It may also be considered useful to compile data on the currency composition of the notional values of the derivatives linked to foreign currencies.

Employee stock options (ESOs)

12.142 ***Employee stock options (AF72) are options to buy the equity of a company at a discount to the market value, offered to employees of the company as a form of remuneration.*** They constitute an agreement made on a given date (the "grant" date) under which an employee may purchase a given number of shares of the employer's stock at a stated price (the "strike" price) either at a stated time (the "vesting" date) or within a period of time (the "exercise" period) immediately following the vesting date. The exercise date is the time at which the option is exercised. It cannot be earlier than the vesting date or later than the end of the exercise

period. Transactions in employee stock options are recorded in the financial account as the counterpart to the element of remuneration of employees represented by the value of the stock option.

12.143 Chapter 25 on Selected issues in financial instruments contains a more detailed discussion on the classifications and (time of) recording of financial derivatives and employee stock options, including related financial instruments.

8. Other accounts receivable/payable

Trade credit and advances

12.144 This category comprises trade credit for goods and services extended to corporations, government, NPISHs, households and the rest of the world, and advances for work that is in progress (if classified as such under inventories) or is to be undertaken. Trade credit and advances do not include loans to finance trade credit, which are classified as loans. It may be valuable to separate short-term trade credit and advances from long-term trade credit and advances by employing the same criteria used to distinguish between other short-term and long-term financial assets.

12.145 For the recording of factoring, see paragraph 12.87.

Emission permits

12.146 An emissions permit (cap-and-trade) system is a flexible market mechanism that establishes a maximum level of pollution – a cap. Enterprises must have a permit to cover each unit of pollution they produce. Each permit stipulates the amount of greenhouse gas emissions that can be emitted (quota). Payments for such emission permits are recorded as prepaid taxes on production, with taxes recorded at the time of surrender, at issuance prices. As such, they qualify as a category of other accounts receivable/payable.

Other accounts receivable/payable n.e.c.

12.147 This category includes accounts receivable or payable, other than those described previously, that is the amounts are not related to the provision of goods and services. It covers amounts related to wages and salaries, dividends, rent, taxes and social contributions. purchases and sales of securities, securities lending fees and gold loan fees, that have accrued but not yet paid. It also includes prepayments of those items. Claims arising from cash collateral agreements (including margins for financial derivatives and reserves held by the factor in a factoring arrangement) are also included if they are not liabilities of a deposit-taking corporation or related to reverse transactions; see paragraphs 12.64, 12.81, 12.87 and 12.138. Interest accrued should be recorded with the financial asset or liability on which it accrues, not as other accounts receivable/payable. However, for securities lending and gold loan fees, which are treated as interest by convention (see paragraphs 8.121), the corresponding entries are included under other accounts receivable/payable, rather than with the instrument to which they relate.

12.148 This category does not include statistical discrepancies.

9. Supplementary items

Foreign direct investment

12.149 Transactions in financial assets and liabilities arising from the provision of, or receipt of, foreign direct investment are to be recorded under the appropriate categories: debt securities, loans, equity, trade credit or other. However, it is encouraged to also record the amounts of foreign direct investment included within each of those categories separately as supplementary items. Foreign direct investment is discussed further in chapter 33 on Transactions and positions between residents and non-residents.

Non-performing loans

12.150 It is useful to identify transactions relating to non-performing loans as supplementary items. There is a discussion of the definition of and recording for non-performing loans in chapter 14 on Balance sheet. In addition, when they are important it may be useful to group all arrears of interest and repayment under a supplementary item. The recording of provisions, among which those related to non-performing loans, including arrears of interest and repayment, is also discussed in chapter 14.

Sustainable finance

12.151 Two primary types of sustainable finance are defined: ESG (Environmental, Social, Governance) finance and green finance with green finance being a sub-set of ESG finance. ***ESG finance is finance for activities or projects that sustain or improve the condition of the environment or society or governance practices. Green finance is finance for activities or projects that sustain or improve the condition of the environment.***

12.152 Countries are encouraged to compile measures of ESG finance and green finance as *of which* items for the following financial instruments: debt securities, loans, equity, and investment fund shares/units. For more information, see chapter 35 on Measuring the sustainability of well-being.

Chapter 13: Other changes in assets and liabilities accounts

A. Introduction

13.1 This chapter is concerned with the recording of changes in the values of assets and liabilities, and thus of the changes in net worth, between opening and closing balance sheets that result from flows that are not transactions, referred to as other flows. Transactions in assets and liabilities and the immediate consequences of transactions on net worth are recorded in the capital account and financial account. The change in the value of non-financial assets resulting from depreciation and depletion as well those resulting from recurrent losses from inventories are treated as transactions and so do not appear in the other changes in assets and liabilities accounts.

13.2 Although the entries relate to flows that are not transactions, they are not "residual" entries. Rather they serve to demonstrate significant changes in the value and composition of items between the opening and closing balance sheets due to other events.

13.3 The entries in the other changes in assets and liabilities accounts cover many different kinds of changes in assets, liabilities and net worth. Some of these are particular to the type of asset concerned, some may apply to all types of assets and liabilities. All changes relating to holding gains and losses are included in the revaluation account. Holding gains and losses arise from changes over time in the level of prices, including those arising from changes in currency rates for assets and liabilities expressed in foreign currency. All other changes in the value of assets and liabilities are treated as being due to a change in volume due to quality change rather than due to changes in prices and are recorded in the other changes in the volume of assets and liabilities account. This includes changes in value that result instantaneously, for example, from a reclassification of an asset or from other one-off events.

13.4 The chapter discusses the two accounts in turn, beginning with the other changes in the volume of assets and liabilities account and proceeding to the revaluation account. Under each account, the entries for each type of asset are discussed separately.

B. The other changes in the volume of assets and liabilities account

13.5 The other changes in the volume of assets and liabilities account records the changes in assets, liabilities and net worth between opening and closing balance sheets that are due neither to transactions between institutional units, as recorded in the capital and financial accounts, nor to holding gains and losses as recorded in the revaluation account. The format of the other changes in the volume of assets and liabilities account, shown in table 13.1, is similar to that of the other accumulation accounts. The entries for changes in assets are on the left-hand side and the entries for changes in liabilities are on the right-hand side. Non-financial assets, both produced and non-produced, and financial assets are shown separately. The balancing item in the account, the change in net worth due to other changes in the volume of assets and liabilities, is the excess of the sum of the changes in assets over the sum of the changes in liabilities recorded in the account and is shown on the right-hand side of the account.

1. Functions of the other changes in the volume of assets and liabilities account

13.6 In the capital account, produced assets enter and leave the integrated framework of national accounts through acquisition less disposal of fixed assets, depreciation and additions to, withdrawals from and recurrent losses from inventories. In addition, the capital account also records the depletion of non-produced natural resources. In the financial account, most financial assets enter the integrated framework of national accounts when the debtor acquires something of value and accepts the obligation to make payment, or payments, to the creditor. Financial assets are extinguished when the debtor has fulfilled the financial obligation under the terms of the agreement.

Table 13.1: The other changes in the volume of assets and liabilities account - concise form - changes in assets

Changes in assets

Code	Other flows	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
K1	Economic appearance of assets	26	0	7	0	0	33			33
K2	Economic disappearance of assets	- 5	0	- 1	0	0	- 6			- 6
K3	Catastrophic losses	- 5	0	- 6	0	0	- 11			- 11
K4	Uncompensated seizures	- 5	0	5	0	0	0			0
K5	Other changes in volume n.e.c.	1	1	0	0	0	2			2
K6	Changes in classification	6	- 2	- 4	0	0	0			0
K61	Changes in sector classification and structure	6	0	- 4	0	0	2			2
K62	Changes in classification of assets and liabilities	0	- 2	0	0	0	- 2			- 2
K1-K6	Total other changes in volume	18	- 1	1	0	0	18			18
K1-K6 AN1	Produced non-financial assets (excluding natural resources)	- 2	- 2	- 3	0	0	- 7			- 7
K1-K6 AN2	Non-produced non-financial assets (excluding natural resources)	- 2	0	1	0	0	- 1			- 1
K1-K6 AN3	Natural resources	20	0	3	0	0	23			23
K1-K6 AF	Financial assets and liabilities	2	1	0	0	0	3			3

Table 13.1 (cont): The other changes in the volume of assets and liabilities account - concise form - changes in liabilities and net worth

Changes in liabilities and net worth

Code	Other flows	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
K1	Economic appearance of assets									0
K2	Economic disappearance of assets									0
K3	Catastrophic losses									0
K4	Uncompensated seizures									0
K5	Other changes in volume n.e.c.	0	0	0	1	0	1			1
K6	Changes in classification	0	0	2	0	0	2			2
K61	Changes in sector classification and structure	0	0	2	0	0	2			2
K62	Changes in classification of assets and liabilities	0	0	0	0	0	0			0
K1-K6	Total other changes in volume	0	0	2	1	0	3			3
K1-K6 AN1	Produced non-financial assets (excluding natural resources)									0
K1-K6 AN2	Non-produced non-financial assets (excluding natural resources)									0
K1-K6 AN3	Natural resources									0
K1-K6 AF	Financial assets and liabilities	0	0	2	1	0	3			3
B102	Changes in net worth due to other changes in the volume of assets and liabilities	18	- 1	- 1	- 1	0	15			15

13.7 Both the capital and financial accounts also record transactions in existing assets and liabilities among the institutional sectors. However, these acquisitions and disposals merely change the ownership of the assets without changing the total net worth for the economy as a whole except where the transactions are between residents and the rest of the world.

13.8 One important function of the other changes in the volume of assets and liabilities account is to allow certain assets to enter and leave the integrated framework of national accounts other than by transactions. The acts of entering and exiting from the balance sheet are referred to as economic appearances and disappearances. Some entrances and exits happen when naturally occurring assets, such as mineral and energy resources, gain economic value or become worthless. Such entrances and exits come about as interactions between institutional units and nature, thus contrasting with entrances and exits that come about as a result of transactions, which typically are interactions by mutual agreement between institutional units. Yet other entrances and exits may also relate to assets created by human activity, such as valuables, purchased goodwill or gold.

13.9 A second function of the account is to record the effects of exceptional, unanticipated events that affect the economic benefits derivable from assets (and in the case of financial assets, corresponding liabilities). These occurrences are referred to as the effect of external events. They include one institutional unit's effectively removing an asset from its owner without the owner's agreement, an action that is not considered a transaction because the element of mutual agreement is absent. These events also include those that destroy assets, such as natural disaster or war.

13.10 A third function of the account is to record changes in classifications of institutional units, assets and liabilities, and in the structure of institutional units.

13.11 The three sections that follow discuss first the recording of the economic appearance and disappearance of assets and liabilities, then the effects of external events on the value of assets and finally changes in the classification and structure of assets.

2. Appearance and disappearance of assets and liabilities other than by transactions

13.12 Entries relating to the appearance and disappearance of assets and liabilities can be grouped according to the main type of asset under consideration as follows:

a. entries relating to recognition of produced assets;

b. entries relating to entry and exit from the asset boundary of non-produced natural resources, with the exception of depletion;

c. entries relating to contracts, leases and licences;

d. changes in purchased goodwill and marketing assets; and

e. entries relating to financial assets and liabilities.

Table 13.2 shows a disaggregation of table 13.1 including the various entries for economic appearance and disappearance of assets and liabilities.

Table 13.2: The other changes in the volume of assets and liabilities accounts – changes in assets due to economic appearance and disappearance

Changes in assets

Code	Other flows	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
K1	Economic appearance of assets	26	0	7	0	0	33			33
K1 AN1	Produced non-financial assets (excluding natural resources)			3			3			3
K1 AN11	Fixed assets (excluding produced natural resources)									
K1 AN12	Inventories (excluding produced natural resources)									
K1 AN13	Valuables									
K1 AN2	Non-produced non-financial assets (excluding natural resources)	4	0	0	0	0	4			4
K1 AN21	Contracts, leases and licenses									
K1 AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange									
K1 AN23	Purchased goodwill and marketing assets									
K1 AN3	Natural resources	22		4			26			26
K1 AN31	Land									
K1 AN32	Mineral and energy resources									
K1 AN33	Biological resources									
K1 AN34	Water resources									
K1 AN39	Other natural resources									
K1 AF	Financial assets and liabilities						0			0
K2	Economic disappearance of assets	- 5	0	- 1	0	0	- 6			- 6
K2 AN1	Produced non-financial assets (excluding natural resources)						0			0
K2 AN11	Fixed assets (excluding produced natural resources)									
K2 AN12	Inventories (excluding produced natural resources)									
K2 AN13	Valuables									
K2 AN2	Non-produced non-financial assets (excluding natural resources)	- 3	0	0	0	0	- 3			- 3
K2 AN21	Contracts, leases and licenses									
K2 AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange									
K2 AN23	Purchased goodwill and marketing assets									
K2 AN3	Natural resources	- 2		- 1			- 3			- 3
K2 AN31	Land									
K2 AN32	Mineral and energy resources									
K2 AN33	Biological resources									
K2 AN34	Water resources									
K2 AN39	Other natural resources									
K2 AF	Financial assets and liabilities						0			0
K3	Catastrophic losses	- 5	0	- 6	0	0	- 11			- 11
K4	Uncompensated seizures	- 5	0	5	0	0	0			0
K5	Other changes in volume n.e.c.	1	1	0	0	0	2			2
K6	Changes in classification	6	- 2	- 4	0	0	0			0
K61	Changes in sector classification and structure	6	0	- 4	0	0	2			2
K62	Changes in classification of assets and liabilities	0	- 2	0	0	0	- 2			- 2
K1-K6	Total other changes in volume	18	- 1	1	0	0	18			18
K1-K6 AN1	Produced non-financial assets (excluding natural resources)	- 2	- 2	- 3	0	0	- 7			- 7
K1-K6 AN2	Non-produced non-financial assets (excluding natural resources)	- 2	0	1	0	0	- 1			- 1
K1-K6 AN3	Natural resources	20	0	3	0	0	23			23
K1-K6 AF	Financial assets and liabilities	2	1	0	0	0	3			3

Table 13.2 (cont): The other changes in the volume of assets and liabilities accounts – changes in liabilities and net worth due to economic appearance and disappearance

Changes in liabilities and net worth

Code	Other flows	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
K1	Economic appearance of assets									0
K1 AN1	Produced non-financial assets (excluding natural resources)									0
K1 AN11	Fixed assets (excluding produced natural resources)									
K1 AN12	Inventories (excluding produced natural resources)									
K1 AN13	Valuables									
K1 AN2	Non-produced non-financial assets (excluding natural resources)									0
K1 AN21	Contracts, leases and licenses									
K1 AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange									
K1 AN23	Purchased goodwill and marketing assets									
K1 AN3	Natural resources									0
K1 AN31	Land									
K1 AN32	Mineral and energy resources									
K1 AN33	Biological resources									
K1 AN34	Water resources									
K1 AN39	Other natural resources									
K1 AF	Financial assets and liabilities									0
K2	Economic disappearance of assets									0
K2 AN1	Produced non-financial assets (excluding natural resources)									0
K2 AN11	Fixed assets (excluding produced natural resources)									
K2 AN12	Inventories (excluding produced natural resources)									
K2 AN13	Valuables									
K2 AN2	Non-produced non-financial assets (excluding natural resources)									0
K2 AN21	Contracts, leases and licenses									
K2 AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange									
K2 AN23	Purchased goodwill and marketing assets									
K2 AN3	Natural resources									0
K2 AN31	Land									
K2 AN32	Mineral and energy resources									
K2 AN33	Biological resources									
K2 AN34	Water resources									
K2 AN39	Other natural resources									
K2 AF	Financial assets and liabilities									0
K3	Catastrophic losses									0
K4	Uncompensated seizures									0
K5	Other changes in volume n.e.c.	0	0	0	1	0	1			1
K6	Changes in classification	0	0	2	0	0	2			2
K61	Changes in sector classification and structure	0	0	2	0	0	2			2
K62	Changes in classification of assets and liabilities	0	0	0	0	0	0			0
K1-K6	Total other changes in volume	0	0	2	1	0	3			3
K1-K6 AN1	Produced non-financial assets (excluding natural resources)									0
K1-K6 AN2	Non-produced non-financial assets (excluding natural resources)									0
K1-K6 AN3	Natural resources									0
K1-K6 AF	Financial assets and liabilities	0	0	2	1	0	3			3
B102	Changes in net worth due to other changes in the volume of assets and liabilities	18	- 1	- 1	- 1	0	15			15

Economic recognition of produced assets

13.13 Two types of assets can appear under this item: public monuments and valuables. As was described in chapter 11 on Capital account, public monuments are objects, structures or sites of significant or special value. Valuables are items held as stores of value because their value is expected to appreciate, or at least not depreciate, over time. The capital account records the acquisition of valuables and public monuments when these are newly produced goods or imported and it records transactions in existing goods already classified as valuables and public monuments.

13.14 However, existing goods, valuables and public monuments may not already have been recorded in the balance sheets for any of several reasons; they may date from a time before the time period covered by the accounts, they were originally recorded as consumption goods or, if structures, they have already been written off.

Public monuments

13.15 Public monuments are included with dwellings and with other buildings and structures in the classification of fixed assets. When the special archaeological, historical or cultural significance of a structure or site not already recorded in the balance sheet is first recognized, it is classified as an economic appearance and recorded in the other changes in the volume of assets and liabilities account. For example, such recognition might be accorded to an existing structure or site that is fully written off and thus no longer recorded in the balance sheet. Alternatively, a structure or site that is already within the asset boundary but is new or only partially written off, may be assessed as having the status of a public monument. If the monument was previously written off, then its recognition as a public monument is recorded as an economic appearance of an asset. If it was previously classified as another type of asset, it is recorded as a reclassification of an asset (discussed below) and if at the same time a new valuation is placed on the monument, this increase in value is recorded under economic appearance. If the reclassification occurs at the time of a sale of the asset, for example the acquisition of an asset by general government, this acquisition is recorded in the capital account as normal.

Valuables

13.16 For valuables, such as precious stones, antiques and other art objects, when the high value or artistic significance of an object not already recorded in the balance sheet is first recognized, it is classified as an economic appearance. Hitherto, the object may have been of little value and not considered an asset. For example, the item might have been considered an ordinary good whose purchase had been included in household final consumption expenditure. Recognition of its worth as a store of value leads to its entrance into the balance sheet as a valuable. The recognition of the value of a previously unvalued item is often associated with a sale (for example at auction). The sale is recorded in the capital account as the sale and purchase of a valuable, it having been entered first into the balance sheet of the seller.

Entry of natural resources into the asset boundary

Discoveries and upwards reappraisals of mineral and energy resources

13.17 In the integrated framework of the SNA, non-renewable mineral and energy resources are defined as those proven resources of coal, oil and natural gas, of metallic minerals or of non-metallic minerals that are economically exploitable, given current technology and relative prices. This coincides with commercially recoverable resources (class A of the *SEEA Central Framework*, which is based on the *UNFC*. The capital account records depletion as well as acquisitions less disposals of the resources that exist under those conditions. The other changes in the volume of assets and liabilities account, in contrast, records increases due to discoveries and reappraisals.

13.18 One way in which the resources may increase is by the discovery of new exploitable deposits, whether as a result of systematic scientific explorations or surveys or by chance. Economic appearance may also occur because resources may be increased by the inclusion of deposits for which exploitation was previously

uneconomic but becomes economic as a result of technological progress or relative price changes. In practice, the economic appearance of these resources can be approximated by those resources for which permissions to exploit have been granted, and/or those for which the existence is explicitly recognised by (past) monetary transactions. Resources for which permissions have been granted would thus come into existence, via other changes in the volume of assets, in the accounts of the lessor (usually government), and the accounts of the lessee (i.e., the extractor) in line with the appropriation of the present value of the future resource rents.

13.19 Renewable energy resources may come into existence by exploiting new opportunities to generate electricity through wind turbines, solar panels, and the like. This may result in an increased value of the land, which would typically be reflected in the underlying value of the land. However, if the underlying value of land has not been recognised and valued as an economic asset (e.g., public land) or does not become apparent through market transactions, or land is not involved (e.g., the exploitation of wind turbines on open seas), the value of the renewable energy resource is to be calculated using the present value of future resource rents. In all these cases, the increase in the value of these assets is to be recorded as an other change in the volume of assets.

Natural growth of non-cultivated biological resources

13.20 The natural growth of non-cultivated biological resources, such as fish stocks under a quota regime, may take the form of fish becoming more numerous. Although these resources are economic assets, growth of this kind is not under the direct control, responsibility and management of an institutional unit and thus is not treated as production.

13.21 The value of these biological resources, such as those related to fish stocks, may consist of two elements: the fish itself, and the value of the underlying asset (i.e., the geographical area of the fishing ground). In the latter case, the value may be encapsulated in the value of the quota put in place. If the levels of extraction are lower than the levels of growth, then the regenerative potential of the underlying asset will increase, while it will decrease if the levels of extraction surpass the levels of growth. The latter is treated as depletion, to be recorded as a cost of production. If levels of extraction are lower than the levels of growth, this is to be recorded as negative depletion. Only the natural growth of fish will thus be treated as other changes in the volume of assets. However, in practice it may be difficult to make this distinction, and the changes in the combined asset, for example as a result of a reappraisal or a reclassification, is recorded as other changes in volume. A similar treatment applies to the asset underlying the growth of trees for timber production (i.e., forest land), even though the growth of trees itself is considered as a continuum from intensive to extensive forms of control, responsibility and management, and thus recorded as work-in-progress on cultivated biological resources.

13.22 Illegal and unregulated logging of trees and fishing is prevalent in some countries. In such cases, and providing the activity is of a sufficiently large size and has an ongoing nature, entries to recognise additional economic asset value in the accounts of the legal owner can be recorded. For more details on the recording of such illegal activities, see paragraphs 13.55, 27.36 and 27.45.

Transfers of other non-produced natural resources to economic activity

13.23 Not all land included in the geographic surface area of a country is necessarily within the asset boundary of the integrated framework of the SNA. Land may make its economic appearance when it is transferred from a wild or waste state to one in which ownership may be established and the land can be put to economic use. It may also acquire value because of activity in the vicinity, for example, land that becomes more desirable and thus more valuable because a new development is established nearby or the creation of an access road. The cost of land improvements, affecting the parcel of land being considered directly, is treated as gross fixed capital formation, recorded as land improvements and subsequently subject to depreciation. Any excess in the increase in value of the land over the value of land improvements or any increase due to adjacent capital activity is recorded as economic appearance.

13.24 For other (non-produced) natural resources, the first substantial market appearance, generally involving commercial exploitation, is the reference point for recording in this account. For forests, gathering firewood

is not commercial exploitation, but large-scale harvesting of a forest for timber is and brings the forest into the asset boundary. Likewise, drawing water from a natural spring does not bring an aquifer into the asset boundary of the integrated framework of the SNA, but a significant diversion of groundwater does. A move to charge for regular extraction from a body of surface water may also bring a water resource into the balance sheet. Another example relates to the appearance of rights to use natural resources in the form of radio spectra.

Quality changes in natural resources due to changes in economic uses

13.25 The integrated framework of the SNA, in general, treats differences in quality as differences in volume. As explained with respect to goods and services in chapter 18 on Measuring prices, volumes and productivity, different qualities reflect different use values (and in the case of goods and services, different resource costs). Different qualities are, therefore, economically different from each other. The same principle applies to non-financial assets. The quality changes recorded here occur as the simultaneous counterparts of the changes in economic use that are shown as changes in classification, as described below. For example, the reclassification of agricultural land to land underlying buildings may result in a change of value as well as a change in classification. In this case, the asset is already within the asset boundary, and it is the change in quality of the asset due to changes in its economic use that is regarded as the appearance of additional amounts of the asset. Another example is that of livestock treated as capital formation, for example, dairy cattle, if they are sent to slaughter earlier than expected.

Exit of natural resources from the asset boundary

13.26 Exits of natural resources from the balance sheets are shown as negative entries on the left-hand side of the other changes in the volume of assets and liabilities account. Many of the possible entries are simply the negative alternative to the positive entries just discussed. However, depletion of natural resources is recorded as a cost of production.

Downwards reappraisals of mineral and energy resources

13.27 The changes recorded here are the negative analogues of gross additions to the level of exploitable mineral and energy resources that result from reassessments of exploitability because of changes in technology or relative prices. In practice, only net additions may be available, and these will be recorded under discoveries and upwards reappraisals of mineral and energy resources.

13.28 Mitigation objectives related to climate change may lead to worldwide reductions in fossil fuel consumption, which may cause losses in the values of corresponding energy resources due to falls in commodity prices. In addition, downwardly bended extraction path projections may give rise to declining energy resource asset values. This phenomenon is also known as stranded assets. Such downward appraisals of the value of energy resources should also be recorded as other changes in the volume of assets, similar to the treatment of reappraisals more generally. Other declines in the value of mineral and energy resources due to changes in commodity prices, which are not related to reappraisals, should be recorded as revaluations.

Depletion

13.29 The depletion of natural resources, in physical terms, represents the decrease in the quantity or value of the stock of a non-produced natural resource over an accounting period that is due to the extraction of the natural resource occurring at a level greater than that of regeneration; in monetary terms, it corresponds with the decline in future economic benefits, due to extraction, that can be earned from a resource. Depletion is recorded as a cost of production similar to depreciation, and not as an other change in the volume of assets. See also section I of chapter 7 on Production account.

Transfers of other natural resources out of economic activity

13.30 It is possible that some natural resources cease to be deployed in economic activity for a considerable period of time, because of changing technology or because of reduced demand for the resulting product or for legislative reasons, for example the suspension of fishing to ensure the survival of fish stocks.

Quality changes in natural resources due to changes in economic uses

13.31 The changes recorded here are the negative equivalent of the upward changes in volume associated with the changes in classification. For example, if a change in land use leads to reclassifying some land from land designated to be used for buildings to communal grazing land, there may be a resulting change in the value of the land.

13.32 All degradation of land, water resources and other natural assets due to less predictable erosion and other damage to land from forest fires or other natural events should also be considered as a quality change, and thus recorded in the other changes in the volume of assets and liabilities account. However, changes in the value of, for example, forest land, resulting from a change in the regenerative potential due to its use in production is to be recorded as (negative) depletion.

Initiation and cancellation of contracts, leases and licences

13.33 The contracts, leases and licences that can be treated as assets in their own right are all some form of transferable lease, contract or permit. They may relate to the use of a fixed asset under an operating lease, the use of a non-produced natural resource (e.g., land) under a resource lease, a permit to undertake some specific economic activity or a service contract relating to future services to be provided by a named individual. Non-fungible tokens that grant limited commercial rights are also included under this category. However, in the case of certain natural resources (e.g., mineral and energy resources), the relevant asset may already be accounted for as a natural resource (and not as a resource lease), as a result of allocating the natural resource to the lessor and lessee in line with the appropriation of the present value of future resource rents.

13.34 Holding the operating lease, the resource lease, the permit or the service contract represents an asset for the holder only when two conditions hold:

a. the current prevailing price for the use of the asset, permit or provision of the service differs from the price specified in the contract or lease or paid for the permit, and

b. the holder of the lease, contract or permit can legally and practically realize this difference by subcontracting the lease or contract or on-selling the permit.

In practice, it is recommended to try to record such assets only when they are sold. In this case they are first recorded in the other changes in the volume of assets and liabilities account and subsequently form the basis of a transaction (or series of transactions) in the capital account.

13.35 The value of the contract, lease or licence treated as an asset is equal to the present value of the excess of the prevailing price over the contract price. It will decline as the period of the agreement declines and the difference in price is no longer evident. Changes in the value of the contract, lease or licence due to changes in the prevailing price are recorded as revaluation; changes due to the expiration of the advantage given by the asset as the time over which it is valid are recorded as other changes in volume.

13.36 There is more extensive discussion of the treatment of contracts, leases and licences in chapter 27.

Entry of crypto asset without a corresponding liability designed to act as a medium of exchange

13.37 Crypto assets without a corresponding liability designed to act as a medium of exchange are considered non-produced non-financial assets. When these crypto assets are brought into circulation in exchange for production activities (e.g., proof-of-work, proof-of-stake, etc.), the emergence of the newly circulated crypto

assets are not to be recorded as other changes in the volume of assets,. Instead, the payments for the validation services are to be recorded as transactions in crypto assets payable by the owners of the existing crypto assets, with the new crypto assets diluting the value of existing crypto assets. This is akin to when a company issues additional shares and the existing shareholders do not partake in the offering. Similarly, the initial holders of crypto assets knowingly are diluting the value of their crypto assets to benefit in the future, while the portfolio of the producers increases in line with their provision of validation services. Changes in the prices are to be recorded as holding gains and losses in the revaluation account.

Changes in the value of purchased goodwill and marketing assets

13.38 When an enterprise, whether a corporation, quasi-corporation or unincorporated enterprise, is sold, the price paid may not equal the sum of all the assets less the liabilities of the enterprise. The difference between the price paid and the sum of all the assets less liabilities is called the purchased goodwill and marketing assets of the enterprise. The value may be positive or negative (or zero). By its calculation and designation as an asset of the enterprise, the net worth of the enterprise at the moment it is bought is exactly zero, whatever the legal status of the enterprise.

13.39 The value of purchased goodwill and marketing assets is calculated at the time of the sale, entered in the books of the seller in the other changes in the volume of assets and liabilities account and then exchanged as a transaction with the purchaser in the capital account. Thereafter the value of the purchased goodwill and marketing asset must be written down in the books of the purchaser via entries in the other changes in the volume of assets and liabilities account. The rate at which it is written down should be in accordance with commercial accounting standards. These are typically conservative in the amount that may appear on the balance sheet of an enterprise and should be subject to an "impairment test" whereby an accountant can satisfy himself that the remaining value is likely to be realizable in case of a further sale of the enterprise.

13.40 Goodwill that is not evidenced by a sale or purchase is not considered an economic asset in the integrated framework of the SNA. Exceptionally, a marketing asset may be subject to sale. When this is so, entries should be made for the buyer and the seller along the lines of those made for purchased goodwill and marketing assets when the entire enterprise is sold.

Appearance and disappearance of financial assets and liabilities

13.41 Financial assets that are claims on other institutional units are created when the debtor accepts the obligation to make a payment, or payments, to the creditor in the future; they are extinguished when the debtor has fulfilled the obligation under the terms of the agreement. Monetary gold held in the form of gold bullion (including allocated gold accounts), however, cannot be created and extinguished in this way; hence when it becomes a reserve asset it enters the financial part of the balance sheet as a reclassification in the other changes in the volume of assets and liabilities account from valuables to monetary gold. (At the time it is acquired by a monetary authority it is first classified as a valuable.) Reclassifications are also made for unallocated gold accounts that become part of monetary gold. When unallocated gold accounts become reserve assets they are reclassified from currency and deposits to monetary gold, also in the other changes in the volume of assets and liabilities accounts. In the case monetary gold becomes subject to reverse transactions (i.e., gold swaps), and is not readily available anymore for meeting balance of payments financing needs, this is also recorded as an other change in the volume of reserve assets; see also paragraph 12.46. Monetary gold may be sold to another monetary authority but otherwise any reduction in holdings follows a similar declassification path; the monetary gold is reclassified to be either a valuable (in the case of gold bullion) or currency and deposits (in the case of allocated gold accounts). Subsequent transactions, if and when they occur, are recorded in terms of valuables or currency and deposits and not in terms of monetary gold.

13.42 Also recorded here are the effects of events not anticipated when the terms of financial claims were set.

Debt operations

13.43 There are a number of circumstances that may lead to reduction or cancellation of debt by other than normal repayment of liabilities. The most common instances are described below.

13.44 A debtor and creditor may become parties to a bilateral agreement (often referred to as "debt forgiveness") that a financial claim no longer exists. Such an agreement gives rise in the integrated framework of national accounts to the recording of a capital transfer payable or receivable (recorded in the capital account at the time the debt forgiveness occurs) and the simultaneous extinction of the claim (recorded in the financial account). Debt forgiveness usually concerns government debt. Some taxes and social security contributions that government recognizes as unlikely to be collected from the outset are excluded from tax and social security contribution receipts and so do not appear in the other changes in the volume of assets and liabilities account.

13.45 Changes in claims resulting from debt assumption or rescheduling should be reflected in the financial account when the terms of the debt contract (maturity, interest rate, etc.) change, or when the institutional sector of the creditor or debtor changes, as these are considered new contractual arrangements. However, all other changes in claims resulting from write-offs and write-downs are excluded from the financial account because there is no mutual agreement between the parties. Specifically, a creditor may recognize that a financial claim can no longer be collected because of bankruptcy, liquidation or other factors for which there is public evidence of loan deterioration, and he may remove the claim from his balance sheet. This recognition (by the creditor) should be accounted for in the other changes in the volume of assets and liabilities account. (The corresponding liability must also be removed from the balance sheet of the debtor to maintain balance in the accounts of the total economy.)

13.46 Most commercial situations where the impossibility of debt collection is recognized are treated as unilateral cancellation of debt. Unilateral cancellation of a financial claim by a debtor (debt repudiation) is not recognized in the SNA sequence of economic accounts. Write-downs that reflect changes in the actual market values of financial assets should be accounted for in the revaluation account. However, changes in value that are imposed solely to meet regulatory, supervisory or accounting requirements do not reflect the actual market values of those financial assets and should not be recorded in the SNA sequence of economic accounts.

13.47 Another debt-related operation that raises questions as to how it should be recorded in the integrated framework of national accounts relates to debt defeasance. Debt defeasance allows a debtor (whose debts are generally in the form of debt securities and loans) to remove certain liabilities from the balance sheet by pairing irrevocably assets of equal value to the liabilities. Subsequent to the defeasance, neither the assets nor the liabilities are included in the balance sheet of the debtor, nor, frequently, need they be reported for statistical purposes. Defeasance may be carried out either by placing the paired assets and liabilities in a trust account within the institutional unit concerned, or by transferring them to another institutional unit. In the former case, no entry is recorded for defeasance and the assets and liabilities will not be excluded from the balance sheet of the unit. In the latter case, the transactions by which the assets and liabilities are moved to the second institutional unit are recorded in the financial account of the units concerned and reported in the balance sheet of the unit that holds the assets and liabilities. Therefore, debt defeasance as such never results in assets and liabilities being removed from the SNA sequence of economic accounts, although it sometimes leads to a change in the institutional unit that reports those assets and liabilities.

Creation and expiration of financial derivatives

13.48 Typically there are no entries in the other change in the volume of assets and liabilities accounts for financial derivatives. Financial derivatives appear in the financial account when an agreement is reached between the two parties concerned. Employee stock options are similarly recorded in the same account at the grant date. They then may be subject to transactions in the financial account. When the agreement described in the derivative is activated, or it lapses because the time period is exhausted, the value of the derivative becomes zero and the change in value is shown in the revaluation account.

13.49 If the amount payable under a derivative remains due for payment after the derivative matures, the amount due no longer represents a derivative as there is no longer any risk associated with it. It is therefore reclassified

as an other account receivable/payable.

3. The effect of external events on the value of assets and liabilities

13.50 There are three principal causes of the reduction in value of an asset (and in the case of financial assets, the related liability), or even its total disappearance, that are not related to the nature of the asset but to conditions prevailing in the economy that impact either the value or the ownership of assets. These are catastrophic losses, uncompensated seizures and other changes in volume not elsewhere classified. Each is discussed below. Table 13.3 shows an expansion of table 13.1 to include entries for these events.

Catastrophic losses

13.51 The volume changes recorded as catastrophic losses in the other changes in the volume of assets and liabilities account are the result of large scale, discrete and recognizable events that may destroy a significantly large number of assets within any of the asset categories. Such events will generally be easy to identify. They include major earthquakes, volcanic eruptions, tidal waves, exceptionally severe hurricanes, drought and other natural disasters; acts of war, riots and other political events; and technological accidents such as major toxic spills or release of radioactive particles into the air. Included here are such major losses as deterioration in the quality of land caused by abnormal flooding or wind damage; destruction of biological resources by forest fires, drought or outbreaks of disease; destruction of buildings, equipment or valuables in flooding, forest fires or earthquakes.

13.52 Catastrophic losses of financial assets are less common. However, it may be the case that foreign-owned real estate, for which a notional unit is identified, is destroyed in a natural disaster. If the value of the real estate is completely wiped out, the loss should be recorded as an other change in the volume of the (imputed) equity of the owner, as the notional unit effectively ceases to exist. However, if some value remains, the loss in value of the (imputed) equity should be recorded as a revaluation of the equity, while the loss in value of the real estate remains to be recorded as an other change in volume. This is because the direct investor technically owns equity in the notional unit and not the real estate itself.

13.53 Catastrophic losses of financial assets may also relate to cases where evidence of ownership depends on written records and these records are destroyed, as a consequence of which it may not be possible to re-establish ownership. Accidental destruction of currency or bearer securities may result from a natural catastrophe or political events.

Uncompensated seizures

13.54 Governments or other institutional units may take possession of the assets of other institutional units, including non-resident units, without full compensation for reasons other than the payment of taxes, fines, or similar levies. If the compensation falls substantially short of the values of the assets as shown in the balance sheet, the difference should be recorded as an increase in assets for the institutional unit doing the seizing and a decrease in assets for the institutional unit losing the asset under the entry for uncompensated seizures of assets.

13.55 Uncompensated seizures may also be the result of illegal and unregulated logging of trees or fishing. In such cases, and providing the activity is of a sufficiently large size and has an ongoing nature, the illegal seizure of the relevant assets from the legal owner are recorded as other changes in the volume of assets.

13.56 It should be noted that foreclosures and repossessions of goods by creditors are not treated as uncompensated seizures. They are treated as transactions, specifically as disposals by debtors and acquisitions by creditors, because, explicitly or by general understanding, the agreement between debtor and creditor provided this avenue of recourse.

Table 13.3: The other changes in the volume of assets and liabilities account - changes in assets due to external events

Changes in assets

Code	Other flows	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
K1	Economic appearance of assets	26	0	7	0	0	33			33
K2	Economic disappearance of assets	- 5	0	- 1	0	0	- 6			- 6
K3	Catastrophic losses	- 5	0	- 6	0	0	- 11			- 11
K3 AN1	Produced non-financial assets (excluding natural resources)	- 5		- 4			- 9			- 9
K3 AN11	Fixed assets (excluding produced natural resources)									
K3 AN12	Inventories (excluding produced natural resources)									
K3 AN13	Valuables									
K3 AN2	Non-produced non-financial assets (excluding natural resources)			- 2			- 2			- 2
K3 AN21	Contracts, leases and licenses									
K3 AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange									
K3 AN23	Purchased goodwill and marketing assets									
K3 AN3	Natural resources						0			0
K3 AN31	Land									
K3 AN32	Mineral and energy resources									
K3 AN33	Biological resources									
K3 AN34	Water resources									
K3 AN39	Other natural resources									
K3 AF	Financial assets and liabilities						0			0
K4	Uncompensated seizures	- 5	0	5	0	0	0			0
K4 AN1	Produced non-financial assets (excluding natural resources)	- 1		1			0			0
K4 AN11	Fixed assets (excluding produced natural resources)									
K4 AN12	Inventories (excluding produced natural resources)									
K4 AN13	Valuables									
K4 AN2	Non-produced non-financial assets (excluding natural resources)	- 4		4			0			0
K4 AN21	Contracts, leases and licenses									
K4 AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange									
K4 AN23	Purchased goodwill and marketing assets									
K4 AN3	Natural resources						0			0
K4 AN31	Land									
K4 AN32	Mineral and energy resources									
K4 AN33	Biological resources									
K4 AN34	Water resources									
K4 AN39	Other natural resources									
K4 AF	Financial assets and liabilities						0			0
K5	Other changes in volume n.e.c.	1	1	0	0	0	2			2
K5 AN1	Produced non-financial assets (excluding natural resources)	1					1			1
K5 AN11	Fixed assets (excluding produced natural resources)									
K5 AN12	Inventories (excluding produced natural resources)									
K5 AN13	Valuables									
K5 AN2	Non-produced non-financial assets (excluding natural resources)						0			0
K5 AN21	Contracts, leases and licenses									
K5 AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange									
K5 AN23	Purchased goodwill and marketing assets									
K5 AN3	Natural resources						0			0
K5 AN31	Land									
K5 AN32	Mineral and energy resources									
K5 AN33	Biological resources									
K5 AN34	Water resources									
K5 AN39	Other natural resources									
K5 AF	Financial assets and liabilities		1				1			1
K6	Changes in classification	6	- 2	- 4	0	0	0			0
K61	Changes in sector classification and structure	6	0	- 4	0	0	2			2
K62	Changes in classification of assets and liabilities	0	- 2	0	0	0	- 2			- 2
K1-K6	Total other changes in volume	18	- 1	1	0	0	18			18
K1-K6 AN1	Produced non-financial assets (excluding natural resources)	- 2	- 2	- 3	0	0	- 7			- 7
K1-K6 AN2	Non-produced non-financial assets (excluding natural resources)	- 2	0	1	0	0	- 1			- 1
K1-K6 AN3	Natural resources	20	0	3	0	0	23			23
K1-K6 AF	Financial assets and liabilities	2	1	0	0	0	3			3

Table 13.3 (cont): The other changes in the volume of assets and liabilities account - changes in liabilities due to external events

Changes in liabilities and net worth

Code	Other flows	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
K1	Economic appearance of assets									0
K2	Economic disappearance of assets									0
K3	Catastrophic losses									0
K3 AN1	Produced non-financial assets (excluding natural resources)									0
K3 AN11	Fixed assets (excluding produced natural resources)									
K3 AN12	Inventories (excluding produced natural resources)									
K3 AN13	Valuables									
K3 AN2	Non-produced non-financial assets (excluding natural resources)									0
K3 AN21	Contracts, leases and licenses									
K3 AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange									
K3 AN23	Purchased goodwill and marketing assets									
K3 AN3	Natural resources									0
K3 AN31	Land									
K3 AN32	Mineral and energy resources									
K3 AN33	Biological resources									
K3 AN34	Water resources									
K3 AN39	Other natural resources									
K3 AF	Financial assets and liabilities									0
K4	Uncompensated seizures									0
K4 AN1	Produced non-financial assets (excluding natural resources)									0
K4 AN11	Fixed assets (excluding produced natural resources)									
K4 AN12	Inventories (excluding produced natural resources)									
K4 AN13	Valuables									
K4 AN2	Non-produced non-financial assets (excluding natural resources)									0
K4 AN21	Contracts, leases and licenses									
K4 AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange									
K4 AN23	Purchased goodwill and marketing assets									
K4 AN3	Natural resources									0
K4 AN31	Land									
K4 AN32	Mineral and energy resources									
K4 AN33	Biological resources									
K4 AN34	Water resources									
K4 AN39	Other natural resources									
K4 AF	Financial assets and liabilities									0
K5	Other changes in volume n.e.c.	0	0	0	1	0	1			1
K5 AN1	Produced non-financial assets (excluding natural resources)									0
K5 AN11	Fixed assets (excluding produced natural resources)									
K5 AN12	Inventories (excluding produced natural resources)									
K5 AN13	Valuables									
K5 AN2	Non-produced non-financial assets (excluding natural resources)									0
K5 AN21	Contracts, leases and licenses									
K5 AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange									
K5 AN23	Purchased goodwill and marketing assets									
K5 AN3	Natural resources									0
K5 AN31	Land									
K5 AN32	Mineral and energy resources									
K5 AN33	Biological resources									
K5 AN34	Water resources									
K5 AN39	Other natural resources									
K5 AF	Financial assets and liabilities	0	0	0	1	0	1			1
K6	Changes in classification	0	0	2	0	0	2			2
K61	Changes in sector classification and structure	0	0	2	0	0	2			2
K62	Changes in classification of assets and liabilities	0	0	0	0	0	0			0
K1-K6	Total other changes in volume	0	0	2	1	0	3			3
K1-K6 AN1	Produced non-financial assets (excluding natural resources)									0
K1-K6 AN2	Non-produced non-financial assets (excluding natural resources)									0
K1-K6 AN3	Natural resources									0
K1-K6 AF	Financial assets and liabilities	0	0	2	1	0	3			3
B102	Changes in net worth due to other changes in the volume of assets and liabilities	18	- 1	- 1	- 1	0	15			15

Other changes in volume n.e.c.

13.57 The value of a fixed asset is continually reduced by the depreciation until the asset is disposed of or has no remaining value. It is possible, though, for the assumptions underlying the calculation of depreciation to be mistaken and when this is so, corrections need to be made in the other changes in the volume of assets and liabilities account. Similarly, if the assumption about the rate of shrinkage of inventories is mistaken, this should also be corrected in the other changes in the volume of assets and liabilities account. The financial assets and liabilities that can be affected by volume change are some of the technical reserves and entitlements for insurance, pension and standardized guarantee schemes. There is further discussion of this in chapter 24 on Insurance and pensions and chapter 25 on Selected issues in financial instruments.

Fixed assets

13.58 The calculation of the depreciation reflects an assumption about normal rates of physical deterioration, obsolescence and accidental damage. Each of these assumptions may prove to be faulty. In that case, an adjustment in the other changes in the volume of assets and liabilities account must be made. In principle, revised assumptions, reflecting the new circumstances, should then be used to calculate depreciation for the remainder of the asset's useful life. If this is not done, continual adjustment in the other changes in the volume of assets and liabilities account is necessary and the measure of net value added in subsequent years is overstated.

13.59 Physical deterioration may include the effect of unforeseen environmental degradation on fixed assets. Entries must, therefore, be made in the other changes in the volume of assets and liabilities account for the decline in the value of the fixed assets from, for example, the depositions of air emissions on building surfaces or vehicle bodies.

13.60 The introduction of improved technology such as improved models of the asset or of a new production process that no longer requires the asset may lead to unforeseen obsolescence. In consequence, the amount included for their previously expected obsolescence may fall short of the actual obsolescence.

13.61 Military weapons systems comprising vehicles and other equipment such as warships, submarines, military aircraft, tanks, missile carriers and launchers, etc. are used continuously in the production of defence services, even if their peacetime use is simply to provide deterrence. Depreciation of these systems is typically based on its use in peacetime. More than expected decreases in value, due to their use and destruction in war times, should be recorded as other changes in the volume of assets.

13.62 More generally, the amount included for normally expected damage may fall short of the actual damage. For the economy as a whole, this difference should normally be small; for individual units this difference may be significant and may fluctuate in sign. Adjustments must therefore be made in the other changes in the volume of assets and liabilities account for the decline in the value of the fixed assets due to these events. These losses are larger than normal, but are not on a scale sufficiently large to be considered catastrophic.

13.63 As explained in chapter 11 on Capital account, costs of ownership transfer should be written off over the expected time the asset will be in the possession of the purchaser. If the asset is disposed of before the costs of ownership transfer are completely written off, the remainder should also be recorded in the other changes in the volume of assets and liabilities account.

13.64 It is possible that the initial assumptions on any or all of these conditions were overcautious. If that proves to be so, then an upward revision to the value of the asset should be made rather than a downward one.

13.65 Production facilities with long construction periods may cease to have an economic rationale before they are complete or are put into service. For example, a nuclear power plant or industrial site may never be put into service. When the decision to abandon is made, the value of the fixed asset (or in some case, work-in-progress inventories, as explained in chapter 11 on Capital account), as recorded in the balance sheet, should be written off in the other changes in the volume of assets and liabilities account.

Exceptional losses in inventories

13.66 Exceptional losses from fire damage, from robberies, from insect infestation of grain stores, from an unusually high level of disease in livestock, etc., should be recorded here. In this context, exceptional losses indicate that the losses are not only large in value but also irregular in occurrence. Even very large losses, if they occur regularly, should be taken into account when calculating the change in inventories calculated for entry in the capital account as explained in chapter 11.

Natural resources

13.67 The valuation of natural resources is typically based on the present value of expected future resource rents. The calculation of these values relies on a number of assumptions, such as the expected path of extractions, the discount rate, etc. Changes in these assumptions, not driven by changes in expected resource rents as a result of, for example, changes in the longer term expectations of commodity prices or price changes in the costs of extraction, should be recorded as other changes in the volume of assets.

Life insurance and annuity entitlements

13.68 For an annuity, the relationship between premiums and benefits is usually determined when the contract is entered into, taking account of mortality data available at that time. Subsequent changes in mortality data will affect the liability of the annuity provider towards the beneficiary and the consequences are recorded here.

Pension entitlements

13.69 The changes in the volume of pension entitlements apply to defined benefit schemes, those where the pension to be provided is determined wholly or in part by a formula. No such adjustments are needed for defined contribution schemes where the benefits are determined solely in terms of the investment earnings on contributions fed into the scheme.

13.70 Because the nature of a defined benefit pension scheme is that the amounts due are determined by a formula, there are several factors other than increases from current and past service, and the unwinding of the pension entitlements, that may intervene to change the level of entitlements. These factors include, for example, actuarial gains and losses, i.e., changes in entitlements resulting from experience adjustments (the effects of differences between the previous actuarial assumptions and what has actually occurred) and the effects of changes in actuarial assumptions, among which changes in the discount rate, changes in demographic assumptions about life length and other changes in the formula used to determine benefits. It may also include the impact of settlements that eliminate all further entitlements for part or the whole of entitlements. These changes in entitlements are generally to be recorded as other changes in the volume of assets and liabilities, unless they are clearly driven by a price element (such as change in the estimates of entitlements due to changes in the expected levels of price indexation). Changes in the volume of assets and liabilities may also arise from non-negotiated changes in the terms of pension entitlements. Negotiated changes are generally recorded as capital transfers. For more information, reference is made to chapter 24 on Insurance and pensions.

Provisions for calls under standardized guarantee schemes

13.71 If standardized guarantees are provided on a purely commercial basis, the provisions for calls will be covered by the fees paid and investment earnings on them and possible recoveries from the debtor in default. However, government often underwrites such schemes. When it does so, a provision should be entered in the government accounts for the expected excess of calls under the scheme over any fees received, investment income or recoveries made. If the guarantees cover a long period and there is provision for government to claim assets in the case of default, this expected excess should be calculated on the basis of the present value of calls to be made under the scheme. An entry is required whenever a new scheme is introduced or a

significant change to the expected level of calls is recognized, beyond what will be recovered by fees or other means.

4. Changes in classifications

13.72 The other changes in the volume of assets and liabilities account records changes in assets and liabilities that reflect nothing more than changes in the classification of institutional units among sectors, changes in the structure of institutional units and changes in the classification of assets and liabilities. Table 13.4 shows an expansion of table 13.1 to include the entries for changes in classification.

Changes in sector classification and structure

13.73 Reclassifying an institutional unit from one sector to another transfers its entire balance sheet. For example, if an unincorporated enterprise becomes more financially distinct from its owner and takes on the characteristics of a quasi-corporation, it and its balance sheet move from the household sector to the non-financial corporations' sector; or if a financial corporation is newly authorized to take deposits, it may be reclassified from "other financial intermediaries" to "deposit-taking corporations except the central bank".

13.74 If a household moves from one economy to another, taking its possessions (including financial assets) with it, they are also recorded under changes in classifications and structures. As there is no change in ownership of the possessions, there can be no transaction in them.

13.75 Chapter 28 on Non-financial corporations discusses the flows to be recorded when there is corporate restructuring, either when two corporations merge, when one is taken over by another group or when one corporation is split into two or more units. Most of the resulting financial consequences are recorded as transactions but some may be recorded as other volume changes. Chapter 28 also discusses the implications of nationalization and privatization, describing when the consequences are treated as transactions and when as other volume changes including reclassification by sector.

13.76 In the case of from-whom-to-whom tables (see chapter 37), reclassification is needed as a result of trading in securities. When unit A sells a security to unit B, A has a liability and B an asset. If B now sells the same asset to unit C, the transaction between B and C is recorded in the financial account as the sale of a security. Although A is not involved in the sale and purchase of the security between B and C, A's balance sheet is affected as the liability originally owed to B is now owed to C. In the sequence of economic accounts, such a change in the debtor-creditor relationship is recorded in the other changes in the volume of assets and liabilities account, as a reclassification. However, in from-whom-to-whom tables, such a change may be recorded as a financial transaction, following the "debtor-creditor approach"; see chapter 37 on From-whom-to-whom tables and related financial indicators, in particular paragraph 37.13.

Changes in classification of assets and liabilities

13.77 An asset may appear under one heading in the opening balance sheet and under another in the closing balance sheet. Since transactions in assets must be registered as an increase in holding by one party and a decrease in the holding of the same asset by another, the process of change of classification must be recorded in the other changes in the volume of assets and liabilities account. The asset may be first recorded as a transaction under the original classification and then recorded as changing its classification in the balance sheet of the new owner. Alternatively, it may be shown first as a reclassification by the first owner and then as a transaction under its new classification. If the change in classification leads to a change in value, it is treated as a quality change, and thus a change in volume, as described earlier under the discussion on economic appearance and disappearance. The choice between whether to reclassify and then record transactions or vice versa depends on the nature of the transactors and the question of whether the original or new owner benefits from the change in price. Some examples of reclassifications are described below.

Table 13.4: The other changes in the volume of assets and liabilities account - changes in assets due to changes in classifications

Changes in assets

Code	Other flows	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
K1	Economic appearance of assets	26	0	7	0	0	33			33
K2	Economic disappearance of assets	- 5	0	- 1	0	0	- 6			- 6
K3	Catastrophic losses	- 5	0	- 6	0	0	- 11			- 11
K4	Uncompensated seizures	- 5	0	5	0	0	0			0
K5	Other changes in volume n.e.c.	1	1	0	0	0	2			2
K6	Changes in classification	6	- 2	- 4	0	0	0			0
K61	Changes in sector classification and structure	6	0	- 4	0	0	2			2
K61 AN1	Produced non-financial assets (excluding natural resources)	3		- 3			0			0
K61 AN11	Fixed assets (excluding produced natural resources)									
K61 AN12	Inventories (excluding produced natural resources)									
K61 AN13	Valuables									
K61 AN2	Non-produced non-financial assets (excluding natural resources)	1		- 1			0			0
K61 AN21	Contracts, leases and licenses									
K61 AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange									
K61 AN23	Purchased goodwill and marketing assets									
K61 AN3	Natural resources						0			0
K61 AN31	Land									
K61 AN32	Mineral and energy resources									
K61 AN33	Biological resources									
K61 AN34	Water resources									
K61 AN39	Other natural resources									
K61 AF	Financial assets and liabilities	2					2			2
K62	Changes in classification of assets and liabilities	0	- 2	0	0	0	- 2			- 2
K62 AN1	Produced non-financial assets (excluding natural resources)		- 2				- 2			- 2
K62 AN11	Fixed assets (excluding produced natural resources)									
K62 AN12	Inventories (excluding produced natural resources)									
K62 AN13	Valuables									
K62 AN2	Non-produced non-financial assets (excluding natural resources)	0	0	0			0			0
K62 AN21	Contracts, leases and licenses									
K62 AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange									
K62 AN23	Purchased goodwill and marketing assets									
K62 AN3	Natural resources						0			0
K62 AN31	Land									
K62 AN32	Mineral and energy resources									
K62 AN33	Biological resources									
K62 AN34	Water resources									
K62 AN39	Other natural resources									
K62 AF	Financial assets and liabilities	0	0	0			0			0
K1-K6	Total other changes in volume	18	- 1	1	0	0	18			18
K1-K6 AN1	Produced non-financial assets (excluding natural resources)	- 2	- 2	- 3	0	0	- 7			- 7
K1-K6 AN2	Non-produced non-financial assets (excluding natural resources)	- 2	0	1	0	0	- 1			- 1
K1-K6 AN3	Natural resources	20	0	3	0	0	23			23
K1-K6 AF	Financial assets and liabilities	2	1	0	0	0	3			3

Table 13.4 (cont): The other changes in the volume of assets and liabilities account - changes in liabilities and net worth due to changes in classifications

Changes in liabilities and net worth

Code	Other flows	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
K1	Economic appearance of assets									0
K2	Economic disappearance of assets									0
K3	Catastrophic losses									0
K4	Uncompensated seizures									0
K5	Other changes in volume n.e.c.	0	0	0	1	0	1			1
K6	Changes in classification	0	0	2	0	0	2			2
K61	Changes in sector classification and structure	0	0	2	0	0	2			2
K61 AN1	Produced non-financial assets (excluding natural resources)									0
K61 AN11	Fixed assets (excluding produced natural resources)									
K61 AN12	Inventories (excluding produced natural resources)									
K61 AN13	Valuables									
K61 AN2	Non-produced non-financial assets (excluding natural resources)									0
K61 AN21	Contracts, leases and licenses									
K61 AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange									
K61 AN23	Purchased goodwill and marketing assets									
K61 AN3	Natural resources									0
K61 AN31	Land									
K61 AN32	Mineral and energy resources									
K61 AN33	Biological resources									
K61 AN34	Water resources									
K61 AN39	Other natural resources									
K61 AF	Financial assets and liabilities	0	0	2	0	0	2			2
K62	Changes in classification of assets and liabilities	0	0	0	0	0	0			0
K62 AN1	Produced non-financial assets (excluding natural resources)									0
K62 AN11	Fixed assets (excluding produced natural resources)									
K62 AN12	Inventories (excluding produced natural resources)									
K62 AN13	Valuables									
K62 AN2	Non-produced non-financial assets (excluding natural resources)									0
K62 AN21	Contracts, leases and licenses									
K62 AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange									
K62 AN23	Purchased goodwill and marketing assets									
K62 AN3	Natural resources									0
K62 AN31	Land									
K62 AN32	Mineral and energy resources									
K62 AN33	Biological resources									
K62 AN34	Water resources									
K62 AN39	Other natural resources									
K62 AF	Financial assets and liabilities	0	0	0	0	0	0			0
K1-K6	Total other changes in volume	0	0	2	1	0	3			3
K1-K6 AN1	Produced non-financial assets (excluding natural resources)									0
K1-K6 AN2	Non-produced non-financial assets (excluding natural resources)									0
K1-K6 AN3	Natural resources									0
K1-K6 AF	Financial assets and liabilities	0	0	2	1	0	3			3
B102	Changes in net worth due to other changes in the volume of assets and liabilities	18	- 1	- 1	- 1	0	15			15

Sale and reclassification of land and buildings

13.78 Unit A sells farm land to unit B, which uses it to build houses on. If A acquires planning permission before selling the land it should be registered as a change in classification in A's accounts (with a probable gain in value to be recorded as an other volume change also in A's accounts), and then a sale of building land to B. If B acquires planning permission after the sale is complete, then it is farm land that is sold and B records a change of classification (and possibly an other volume change) in its books.

13.79 Similar considerations apply to buildings if they are converted from a dwelling to commercial premises or vice versa in response to official designation about the allowed purpose of a building in that location. A conversion resulting solely from new investment in a previous building is not an other change in the volume of the asset but the result of gross fixed capital formation.

Changes of classification involving inventories

13.80 In all instances, work-in-progress needs to be reclassified to finished goods once completed. Some animals treated as fixed capital because they are kept as dairy stock or for their fleece may be slaughtered for meat at the end of their productive lives. In this case, they should in principle be reclassified from fixed capital to inventories when they cease to yield repeat products. If this is not practicable, or deemed too fastidious, then some of the source of meat should be accounted for by a reduction in fixed capital rather than a withdrawal from inventories. In principle, reclassification from one type of inventory to another or from fixed capital to inventories, should not involve a change in value. If at the time of conversion the previous valuation is different from the appropriate new valuation, an entry in the other changes in the volume of assets and liabilities account is recorded under economic appearance or disappearance as appropriate. If this is found to be happening systematically, the valuation techniques for inventories should be re-examined.

5. Summarizing other volume changes

13.81 Tables 13.2 to 13.4 show details of other volume changes for each type of change with details for each asset as a second level of classification. The information there can be aggregated by type of assets, regardless of the cause for the volume change, as shown in table 13.5. This is the form in which information from the other change in the volume of assets account feeds into the reconciliation between opening and closing balance sheets.

Table 13.5: The other changes in the volume of assets and liabilities account - changes in asset by type of asset

Changes in assets

Code	Other flows	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
K1-K6	Total other changes in volume	18	- 1	1	0	0	18			18
K1-K6 AN1	Produced non-financial assets (excluding natural resources)	- 2	- 2	- 3	0	0	- 7			- 7
K1-K6 AN11	Fixed assets (excluding produced natural resources)									
K1-K6 AN12	Inventories (excluding produced natural resources)									
K1-K6 AN13	Valuables									
K1-K6 AN2	Non-produced non-financial assets (excluding natural resources)	- 2	0	1	0	0	- 1			- 1
K1-K6 AN21	Contracts, leases and licenses									
K1-K6 AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange									
K1-K6 AN23	Purchased goodwill and marketing assets									
K1-K6 AN3	Natural resources	20	0	3	0	0	23			23
K1-K6 AN31	Land									
K1-K6 AN32	Mineral and energy resources									
K1-K6 AN33	Biological resources									
K1-K6 AN34	Water resources									
K1-K6 AN39	Other natural resources									
K1-K6 AF	Financial assets and liabilities	2	1	0	0	0	3			3
K1-K6 AF1	Monetary gold and SDRs	0	0	0	0	0	0			0
K1-K6 AF2	Currency and deposits	0	0	0	0	0	0			0
K1-K6 AF3	Debt securities	0	0	0	0	0	0			0
K1-K6 AF4	Loans	0	0	0	0	0	0			0
K1-K6 AF5	Equity and investment fund shares/units	2	0	0	0	0	2			2
K1-K6 AF6	Insurance, pension and standardized guarantee schemes	0	1	0	0	0	1			1
K1-K6 AF7	Financial derivatives and employee stock options	0	0	0	0	0	0			0
K1-K6 AF8	Other accounts receivable/payable	0	0	0	0	0	0			0

Table 13.5 (cont):The other changes in the volume of assets and liabilities account - changes in liabilities and net worth by type of liability

Changes in liabilities and net worth

Code	Other flows	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
K1-K6	Total other changes in volume	0	0	2	1	0	3			3
K1-K6 AN1	Produced non-financial assets (excluding natural resources)									0
K1-K6 AN11	Fixed assets (excluding produced natural resources)									
K1-K6 AN12	Inventories (excluding produced natural resources)									
K1-K6 AN13	Valuables									
K1-K6 AN2	Non-produced non-financial assets (excluding natural resources)									0
K1-K6 AN21	Contracts, leases and licenses									
K1-K6 AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange									
K1-K6 AN23	Purchased goodwill and marketing assets									
K1-K6 AN3	Natural resources									0
K1-K6 AN31	Land									
K1-K6 AN32	Mineral and energy resources									
K1-K6 AN33	Biological resources									
K1-K6 AN34	Water resources									
K1-K6 AN39	Other natural resources									
K1-K6 AF	Financial assets and liabilities	0	0	2	1	0	3			3
K1-K6 AF1	Monetary gold and SDRs									0
K1-K6 AF2	Currency and deposits	0	0	0	0	0	0			0
K1-K6 AF3	Debt securities	0	0	0	0	0	0			0
K1-K6 AF4	Loans	0	0	0	0	0	0			0
K1-K6 AF5	Equity and investment fund shares/units	0	0	2	0	0	2			2
K1-K6 AF6	Insurance, pension and standardized guarantee schemes	0	0	0	1	0	1			1
K1-K6 AF7	Financial derivatives and employee stock options	0	0	0	0	0	0			0
K1-K6 AF8	Other accounts receivable/payable	0	0	0	0	0	0			0
B102	Changes in net worth due to other changes in the volume of assets and liabilities	18	- 1	- 1	- 1	0	15			15

C. The revaluation account

1. Different holding gains and losses concepts

13.82 The revaluation account, shown in table 13.6, records the holding gains or losses accruing during the accounting period to the owners of non-financial and financial assets and liabilities. The first entries relate to nominal holding gains and losses which are then decomposed into neutral holding gains and losses and real holding gains and losses. Holding gains or losses on assets are recorded on the left-hand side of the account and those on liabilities on the right-hand side.

Table 13.6: The revaluation account - changes in assets

Changes in assets

Code	Other flows	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
K7 AN	Non-financial assets	144	4	44	80	8	280			280
K7 AN1	Produced non-financial assets (excluding natural resources)	63	2	21	35	5	126			126
K7 AN11	Fixed assets (excluding produced natural resources)									
K7 AN12	Inventories (excluding produced natural resources)									
K7 AN13	Valuables									
K7 AN2	Non-produced non-financial assets (excluding natural resources)	1	1				2			2
K7 AN21	Contracts, leases and licenses									
K7 AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange									
K7 AN23	Purchased goodwill and marketing assets									
K7 AN3	Natural resources	80	1	23	45	3	152			152
K7 AN31	Land									
K7 AN32	Mineral and energy resources									
K7 AN33	Biological resources									
K7 AN34	Water resources									
K7 AN39	Other natural resources									
K7 AF	Financial assets and liabilities	8	57	1	16	2	84	7		91
K7 AF1	Monetary gold and SDRs		11	1			12			12
K7 AF2	Currency and deposits						0			0
K7 AF3	Debt securities	3	30	0	6	1	40	4		44
K7 AF4	Loans						0			0
K7 AF5	Equity and investment fund shares/units	5	16	0	10	1	32	3		35
K7 AF6	Insurance, pension and standardized guarantee schemes						0			0
K7 AF7	Financial derivatives and employee stock options						0			0
K7 AF8	Other accounts receivable/payable						0			0

Table 13.6 (cont): The revaluation account - changes in liabilities and net worth

Changes in liabilities and net worth

Code	Other flows	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
K7 AN	Non-financial assets	0	0	0	0	0	0			0
K7 AN1	Produced non-financial assets (excluding natural resources)						0			0
K7 AN11	Fixed assets (excluding produced natural resources)									
K7 AN12	Inventories (excluding produced natural resources)									
K7 AN13	Valuables									
K7 AN2	Non-produced non-financial assets (excluding natural resources)						0			0
K7 AN21	Contracts, leases and licenses									
K7 AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange									
K7 AN23	Purchased goodwill and marketing assets									
K7 AN3	Natural resources						0			0
K7 AN31	Land									
K7 AN32	Mineral and energy resources									
K7 AN33	Biological resources									
K7 AN34	Water resources									
K7 AN39	Other natural resources									
K7 AF	Financial assets and liabilities	18	51	7	0	0	76	15		91
K7 AF1	Monetary gold and SDRs						0	12		12
K7 AF2	Currency and deposits						0			0
K7 AF3	Debt securities	1	34	7		0	42	2		44
K7 AF4	Loans						0			0
K7 AF5	Equity and investment fund shares/units	17	17				34	1		35
K7 AF6	Insurance, pension and standardized guarantee schemes						0			0
K7 AF7	Financial derivatives and employee stock options						0			0
K7 AF8	Other accounts receivable/payable						0			0
B103	*Changes in net worth due to nominal holding gains/losses*	134	10	38	96	10	288	- 8		280

13.83 ***Nominal holding gains and losses (K7) consist of the changes in the monetary value of an asset or liability due to changes in the level of prices.*** The nominal holding gain on a non-financial asset is the value of the economic benefit accruing to the owner of that asset as a result of a change in its price over a period of time. The nominal holding gain on a financial asset is the increase in value of the asset, other than transactions in the assets (including the accrual of interest over a period of time) and other changes in the volume of assets and liabilities. The nominal holding gain on a liability is the decrease in value of the liability, other than by transactions or by other volume changes. A nominal holding gain that is negative is referred to as a holding loss. A positive holding gain, whether due to an increase in the value of a given asset or a reduction in the value of a given liability, increases the net worth of the unit in question. Conversely, a holding loss reduces the net worth of the unit in question, whether due to a reduction in the value of a given asset or an increase in the value of a given liability.

13.84 As well as the absolute change in value of an asset, it is interesting to know how the change in value compares

with a general measure of inflation. When the value of an asset rises over a given period of time by more than the general price level, the asset can be exchanged for a greater volume of the goods, services and assets covered by the general price index at the end of the period than at the beginning. The increase that preserves exactly the same volume of goods and services is called a neutral holding gain. ***Neutral holding gains and losses (K71) over a period reflect the amount by which the value of an asset would be required to increase (decrease), in the absence of transactions and other changes in the volume of assets and liabilities, to maintain command over the same amount of goods and services as at the beginning of the period.***

13.85 The difference between the nominal holding gain or loss and the neutral holding gain or loss for the same asset over the same time period is called the real holding gain or loss. If the value of the asset increases faster than the neutral holding gain, then there is a real holding gain. If the value of the asset does not increase as fast as the overall increase in prices, or does not increase at all, the owner of the asset registers a real holding loss. ***Real holding gains and losses (K72) reflect the amount by which the value of an asset increases (decreases) beyond the neutral holding gains for the period, in the absence of transactions and other changes in the volume of assets and liabilities.*** Nominal, neutral and real holding gains, and the interrelationships between them are explained more fully in the following sections.

13.86 The balancing item in the revaluation account is described as ***changes in net worth due to nominal holding gains and losses (B103). It is defined as the balance of changes in the value of all assets and liabilities of an institutional unit due to holding gains and losses.*** Just as nominal holding gains are decomposed into neutral and real holding gains, so changes in net worth due to nominal holding gains may be decomposed into changes in net worth due to neutral holding gains or losses and changes in net worth due to real holding gains or losses. The latter is an item of considerable analytic interest.

13.87 In order to simplify the terminology and exposition, holding losses will not usually be referred to explicitly unless the context requires it. The term "holding gains" is used to cover both holding gains and losses on the clear understanding that holding gains may be negative as well as positive. Similarly, the term "assets" is used collectively to cover both assets and liabilities, unless the context requires liabilities to be referred to specifically.

13.88 Holding gains are sometimes described as "capital gains". The term "holding gain" is widely used in business accounting and is preferred here because it emphasizes the fact that holding gains accrue purely as a result of holding assets over time without transforming them in any way. Holding gains include not only gains on "capital" such as fixed assets, land and financial assets but also gains on inventories of all kinds of goods held by producers, including work-in-progress, often described as "stock appreciation". For most financial assets, a holding gain experienced by one unit is matched, in whole or in part, by a holding loss for the unit holding the counterpart liability. This is not so for non-financial assets as there are no non-financial liabilities.

13.89 When an asset whose value has increased because of a nominal holding gain is sold or otherwise disposed of, the holding gain is said to be realized. If the asset is retained by the existing owner, the holding gain is unrealized. In common usage, a realized gain is usually understood as the gain realized over the entire period over which the asset is owned or liability is outstanding whether this period coincides with the accounting period or not. Within the integrated framework of the SNA, however, all holding gains and losses are measured only from the start of the accounting period. A holding gain (loss) is realized when an asset that has increased (decreased) in value due to holding gains (losses) since the beginning of the accounting period is sold, redeemed, used or otherwise disposed of, or a liability incorporating a holding gain or loss is repaid. An unrealized holding gain is one accruing on an asset that is still owned or a liability that is still outstanding at the end of the accounting period. It follows that the nominal holding gain or loss on an asset is the sum of the realized and unrealized holding gain or loss for the period in question.

Nominal holding gains

13.90 It is useful to distinguish four different situations giving rise to nominal gains and the methods of valuation to be employed in each case. For clarity of exposition, it is assumed for the moment that there are neither transactions nor other changes in volume intervening between the two dates mentioned.

a. An asset held throughout the accounting period: the nominal holding gain accruing during the accounting period is equal to the closing balance sheet value minus the opening balance sheet value.

These values are the estimated values of the assets if they were acquired at the times the balance sheets are drawn up. The nominal gain is unrealized.

b. An asset held at the beginning of the period that is sold during the period: the nominal holding gain accruing is equal to the disposal value minus the opening balance sheet value. The nominal gain is realized.

c. An asset acquired during the period and still held at the end of the period: the nominal holding gain accruing is equal to the closing balance sheet value minus the actual, or estimated, acquisition value of the asset. The nominal gain is unrealized.

d. An asset acquired and disposed of during the accounting period: the nominal holding gain accruing is equal to the disposal value minus the actual, or estimated, acquisition value. The nominal gain is realized.

13.91 The basic identity linking balance sheets, transactions, other volume changes and nominal holding gains may be expressed as follows:

the value of the stock of the asset in the opening balance sheet valued at the date of the opening balance sheet

plus the value of the asset acquired, or disposed of, in transactions valued at the dates the transactions took place

plus the value of other changes in the volume of the asset valued at the dates the other volume changes are recorded as taking place

plus the value of the nominal holding gains on the asset

equals the value of the stock of the asset in the closing balance sheet, valued at the date of the closing balance sheet.

The values of the assets and liabilities in the closing balance sheet incorporate the unrealized holding gains or losses. The value of transactions includes the value of realized holding gains or losses. It therefore follows that the correct value of the revaluation item must cover both realized and unrealized holding gains, in other words to be the full value of the nominal holding gains or losses.

13.92 Because the total nominal holding gains accruing on a particular category of asset over a given period of time include those accruing on assets acquired or disposed of during the accounting period as well as on assets that figure in the opening or closing balance sheets, it is not possible to calculate total holding gains from balance sheet data on their own. This can be demonstrated by means of a simple example.

13.93 Suppose a corporation owns 100 units of a stock (inventories or shares, for instance) at the beginning of the period and these are worth 20 each or 2 000 in total. At some point in the period, when the price per unit has risen to 22, another 15 units are bought; a cost of 330. At the end of the period, when the price has risen to 25, some 15 units are sold for a value of 375. The value of the stock in the closing balance sheet represents 100 units valued at 25 each or 2 500. The increase in the balance sheet of 500 represents unrealized holding gain on the stock of 100 units. The value of the transactions represents a decrease in the balance sheet since the value of the stock added to the balance sheet (330) is less than the value of stock sold (375). The difference, -45, is a reduction in net worth brought about by realizing some holding gains. The total nominal holding gain is thus 545 which satisfies the identity that the opening stock (2 000) plus the transactions (-45) plus the nominal holding gains (545) plus the other changes in the volume of assets and liabilities (0) equals the value in the closing balance sheet (2 500).

13.94 In order to calculate total holding gains directly, therefore, it is necessary to keep records of all the assets acquired and disposed during the accounting period and the prices at which they were acquired and disposed of, as well as the prices and quantities of assets held at the beginning and end of the period. This sort of recording is more common for financial assets and liabilities than for non-financial assets.

13.95 Each of the five elements that make up the identity in paragraph 13.91 explaining the changes in the balance sheet can be calculated directly and independently of the other four elements. Thus, each element has the same status, none of them being defined residually as a balancing item. Nevertheless, it follows that if any four out of the five elements are calculated directly, the fifth can be estimated residually. For this reason, the

identity can be exploited to estimate nominal holding gains from the other four elements, but without this implying that nominal holding gains are a balancing item in the integrated framework of the SNA.

Neutral holding gains

13.96 In order to calculate the neutral holding gain on an asset, it is desirable to select a comprehensive price index covering as wide a range of goods, services and assets as possible. In practice, the price index for final expenditures is an acceptable choice for most countries, although other comprehensive indices could be used depending upon the availability of data. A comprehensive index of this kind, however, may be available only once a year, or at best quarterly, and after a significant lapse of time. As holding gains may accrue on assets held for only short periods of time, it may also be necessary to make use of an index that measures changes in prices monthly and that becomes available without too much delay. The consumer price index (CPI) usually meets these requirements and an acceptable procedure would be to use the CPI to interpolate and extrapolate movements in a more broadly based index in order to calculate neutral holding gains.

13.97 The neutral holding gain on an asset over a given period of time is equal to the value of the asset at the beginning of the period multiplied by the proportionate change in some comprehensive price index selected to measure the change in the general price level. Neutral holding gains can, therefore, easily be calculated for assets held throughout the accounting period that appear in both the opening and closing balance sheets. It is more difficult, however, to keep track of the neutral holding gains on assets that are acquired or disposed of during the accounting period unless the times at which the various acquisitions and disposals took place are known.

Real holding gains

13.98 The real holding gain on an asset is defined as the difference between the nominal and the neutral holding gain on that asset. The values of the real holding gains on assets thus depend on the movements of their prices over the period in question, relative to movements of other prices, on average, as measured by the general price index. An increase in the relative price of an asset leads to a positive real holding gain and a decrease in the relative price of an asset leads to a negative real gain, whether the general price level is rising, falling or stationary.

13.99 The nominal holding gains on domestic currency, deposits and loans denominated in domestic currency are always zero. During inflation, the neutral gains on such assets and liabilities must be positive and hence the real holding gains must be negative and equal in absolute value to the neutral gains. In other words, the real value of these assets declines both for the creditor and the debtor as a result of inflation. From the point of view of the debtor a reduction in the real value of a liability represents an increase in net worth expressed in real terms. In effect, there is an implicit transfer of real purchasing power from the creditor to the debtor equal in value to the negative real holding gain on the asset or liability. When such transfers are anticipated by creditors, correspondingly higher nominal rates of interest may be demanded on loans and offered on deposits to compensate for the expected transfers, or loans with fixed monetary values may be replaced by indexed loans.

13.100 As changes in relative prices may be either positive or negative, the owners of some assets benefit from real holding gains while the owners of other assets experience real holding losses. Real holding gains may lead to a significant redistribution of real net worth among institutional units, sectors and even countries, the extent of which depends on the amount of variation in the relative price changes taking place. While such variations may occur even when there is no general inflation, there are systematic effects that are associated with the general rate of inflation as a result of the decline in the real values of assets and liabilities when the general price level is rising.

13.101 As real holding gains increase or decrease the purchasing power of the owners of assets, they exert an influence on their economic behaviour. Real holding gains are important economic variables in their own right as well as for purposes of analysing consumption or capital formation. It can be argued that real holding gains ought to be assimilated with income as defined in the integrated framework of national accounts to obtain a more comprehensive measure of income, but there is no consensus on this. Apart from the practical

difficulty of estimating real holding gains and losses, it is likely that their impact on economic behaviour is not the same as that of income received in cash or in kind. Nevertheless, it is clear that information on real holding gains needs to be made available to users, analysts and policymakers.

13.102 As real holding gains may be obtained residually by subtracting neutral from nominal holding gains, the feasibility of calculating real holding gains depends on the feasibility of calculating nominal and neutral gains.

2. Holding gains and losses on specific assets

Fixed assets

13.103 Nominal holding gains are calculated with reference to assets or liabilities that themselves remain qualitatively and quantitatively unchanged during the period over which the holding gain is measured. Thus, changes in the value of physical assets such as structures, equipment or inventories held by producers that are attributable to some physical or economic transformation of those assets over time, whether improvement or deterioration, are not counted as holding gains. In particular, the decline in the value of the fixed assets owned by producers due to their physical deterioration or normal rates of obsolescence or accidental damage is recorded as depreciation and not as a negative holding gain.

13.104 Depreciation should be calculated by valuing the opening and closing stock at the average price of the period precisely in order to ensure it excludes any holding gains. Often the price at the mid-point of the period is taken as the average price of the period. Under moderate rates of inflation this may be an acceptable approximation but is less so the higher the rate of inflation and under severe inflation is very misleading.

13.105 Nominal holding gains may occur on existing fixed assets either because of general inflation or because the price of the asset itself changes over time. When assets of the same kind are still being produced and sold on the market, an existing asset should be valued in the opening or closing balance sheet at the current purchaser's price of a newly produced asset less the accumulated depreciation up to that time also calculated on the basis of the prices prevailing at the time the balance sheet is drawn up. When new assets of the same type are no longer being produced, the valuation of existing assets may pose difficult conceptual and practical problems. If broadly similar kinds of assets are still being produced, even though their characteristics may differ significantly from those of existing assets (for example, new models of vehicles or aircraft), it may be reasonable to assume that, if the existing assets were still being produced, their prices would have moved in the same way as those of new assets. However, such an assumption becomes questionable when the characteristics of new assets are much improved by technical progress. There is further discussion on this topic in the *OECD Manual on Measuring Capital, 2nd edition*.

Inventories

13.106 The estimation of nominal holding gains on inventories may be difficult because of lack of data on transactions or other volume changes in inventories. As explained in chapter 7 on Production account, transactions in inventories of work-in-progress and finished goods may not be adequately recorded because they are internal transactions. Goods entering inventories can be regarded as being acquired by the owner of an enterprise from itself as producer, while goods leaving inventories can be regarded as being disposed of by the owner to the producer for use in production or for sale. These internal transactions should be valued at the prices prevailing at the times they take place. The value of withdrawals thus includes any holding gains on the inventories when stored and this ensures that the value of the holding gain is not included in output. However, as explained in paragraphs 7.157 to 7.160, when the storage of goods is essentially an extension of the process of production, the increase in the value of the goods that is due to this production is not to be counted as a nominal holding gain. In the case of goods for resale, the value of the goods when withdrawn from inventory should include the value of any holding gain or loss that has occurred while they were in store but not the value of any margin to be realized by the wholesaler or retailer. That is to say, goods withdrawn from inventories are valued at the prices prevailing at the time of withdrawal for goods in the same state as when the goods entered inventories (except for the storage case).

13.107 Other volume changes are likely to consist of inventories of goods destroyed as a result of exceptional events

such as natural disasters (floods, earthquakes, etc.) or major fires. Recurrent losses of goods from inventories, such as losses due to regular wastage, pilfering or small-scale illegal logging of trees or fishing, are treated in the same way as deliberate withdrawals. Nominal holding gains on inventories thus relate only to the level of inventories once both exceptional and recurrent losses on inventories have been taken into account.

13.108 Unless records are kept of the quantities of goods entering and leaving inventories and their prices at those times, it is not possible to measure the value of changes in inventories directly. As such records may not be available, it becomes necessary to try to deduce the value of changes in inventories from the value and quantities of the opening and closing inventories using methods that attempt to partition the difference between the values of the opening and closing stocks of assets into transactions and nominal holding gains. Such methods are only as good as the assumptions on which they are based. Estimating holding gains and losses based only on period end data involves two problematical assumptions. The first is that prices increase linearly throughout the period; the second is that the changes in volume of inventories increase or decrease linearly between opening and closing balance sheets. Both assumptions are improbable, especially in the case of seasonal products. It should also be noted that this is not only a problem for the accumulation accounts as the values of changes in inventories of inputs and outputs are needed in order to measure intermediate consumption, output and value added and hence all the balancing items of the integrated framework of the SNA. In general, if these sorts of assumptions need to be made in order to derive holding gains and losses, they should be made over as short a period as possible. In particular, the aggregation of quarterly estimates of this type will be preferable to an annual estimate of the same type.

Natural resources

13.109 Natural resources, such as mineral and energy resources and biological resources yielding once-only products are typically estimated using the present value of future resource rents. Any price change in the expected resource rents as a result of changes in expected future commodity prices or changes in the prices of the extraction costs should be recorded as revaluations. The same holds for the stranding of these assets; see paragraph 13.28.

Valuables

13.110 The nature of valuables is that they are held as a store of value in the expectation that their value will increase over time. Any increase in value of an individual valuable is treated as a nominal holding gain. This may be partitioned into a neutral and a real holding gain in the standard way.

Financial assets and liabilities

13.111 Because it is not always appropriate to describe financial assets and liabilities as having a price, holding gains and losses appear to be treated differently for different categories though the same basic principles apply to all categories. Other changes in the volume of financial assets and liabilities are possible, as described in section B, but are generally ignored in what follows.

13.112 Except for monetary gold and SDRs, the discussion is first in terms of assets denomination in domestic currency and then of the effects when they are denominated in foreign currency.

Monetary gold and SDRs

13.113 Because the price of gold is usually quoted in dollars, monetary gold is subject to nominal and real holding gains and losses because of changes in the exchange rate as well as in the price of gold itself.

13.114 Since the value of the SDR is based on the market exchange rates of a basket of major currencies, the value of SDRs is always subject to nominal and real holding gains and losses. From time to time, new allocations of SDRs may be made; when this occurs the allocation is recorded as a transaction.

Currency

13.115 Domestic currency is not subject to any nominal holding gains or losses. It can be thought of as a fixed "quantity" of currency units (for example, one dollar) with a price that is always unity. However, although the nominal holding gains are zero, the neutral holding gains on currency are not. Under inflation, neutral holding gains are positive and so the associated real holding gains are negative and of an equal size.

Deposits and loans

13.116 Deposits and loans denominated in domestic currency also typically do not register nominal holding gains and losses for the same reasons as currency. There may be increases in the values of a loan or a deposit during an accounting period but this must be due to transactions including the addition of interest to the previous level of principal. As with currency, deposits and loans denominated in domestic currency therefore register real holding losses of the same magnitude as their neutral holding gains. However, an exception should be made for deposits and loans (and other accounts receivable/payable) which are transacted at a discount; in this case the difference between the nominal value and the exchange value should be recorded as a nominal holding loss, unless the discount represents a charge for services provided.

Debt securities

13.117 Debt securities typically have market values and these market values change over time. However, not all of the changes in value are treated as holding gains and losses.

13.118 A bond is a security that gives the holder the unconditional right to a fixed money income or contractually determined variable money income over a specified period of time and (except in the case of perpetual bonds) the right also to a fixed sum as repayment of principal on a specified date or dates. Bonds are usually traded on markets and the holder of a bond may change several times during the life of the bond. The issuer of such a bond may sometimes be able to repay the principal outstanding at any time by purchasing it back in advance of the date on which it matures.

13.119 As explained in more detail in chapter 25 on Selected issues in financial instruments, when a bond is issued at a discount, including deep discounted and zero coupon bonds, the difference between its issue price and its face or redemption value when it matures measures interest that the issuer is obliged to pay over the life of the bond. Such interest is recorded as property income payable by the issuer of the bond and receivable by the holder of the bond in addition to any coupon interest actually paid by the issuer at specified intervals over the life of the bond. In principle, the interest accruing is treated as being simultaneously reinvested in the bond by the holder of the bond. It is, therefore, recorded in the financial account as the acquisition of additional value of the existing asset. Thus the gradual increase in the market price of a bond that is attributable to the accumulation of accrued, reinvested interest reflects a growth in the principal outstanding. It is essentially a quantum or volume increase and not a price increase. It does not generate any holding gain for the holder of the bond or holding loss for the issuer of the bond. The increases in value due to the accrual of interest are recorded in the earned income account and the financial account and not in the revaluation account (nor in the other changes in the volume of assets and liabilities account).

13.120 The prices of fixed-rate marketable bonds also change, however, when the market rates of interest change, the prices varying inversely with the interest rate movements. The impact of a given interest rate change on the price of an individual bond is less, the closer the bond is to maturity. Changes in bond prices that are attributable to changes in market rates of interest constitute price and not quantum changes. They therefore generate nominal holding gains or losses for both the issuers and the holders of the bonds. An increase in interest rates generates a nominal holding gain for the issuer of the bond and an equal nominal holding loss for the holder of the bond, and vice versa in the case of a fall in interest rates. Whenever the interest rate changes, the market value of the bond changes; this change in value is recorded as a revaluation. Within the SNA sequence of economic accounts, the interest recorded due to the fact that the redemption date is nearer is calculated on the basis of the interest rate at the issue date. Over the whole of the life of the bond, therefore, the holding gains and losses are offsetting and total interest recorded is the difference between issue price and redemption price.

13.121 Prices of bonds may also change because of a change in the creditworthiness (up as well as down) of the issuer or guarantor. Such changes give rise to the same sorts of entries as changes in the interest rate. This is because the market price of the bond changes to reflect the market's view of the creditworthiness of the issuer. It does not imply that impairments to loans and deposits should be treated as revaluations. The appropriate treatment for impaired loans is discussed in paragraphs 14.77 to 14.79.

13.122 Nominal holding gains or losses may accrue on bills in the same way as for bonds. However, as bills are short-term securities with much shorter times to maturity, the holding gains generated by interest rate changes are generally much smaller than on bonds with the same face values.

Equity and investment fund shares/units

13.123 For corporations that are foreign direct investment enterprises and investment funds, any undistributed earnings are shown as reinvested earnings in the earned income account and as reinvestment of earnings in the financial account. Reinvestment of earnings increases the value of equity and investment fund shares/units. For listed shares and investment fund shares/units, market prices exist and changes in the value other than via reinvested earnings are treated as holding gains and losses exactly as for inventories with no storage component or valuables.

13.124 For other forms of equity where the value of equity is derived as the balance of assets less liabilities, all changes in the value of equity which are not due to transactions in and other changes in the volume of the relevant equity are to be recorded as holding gains and losses. This recording is not affected by transactions in and other changes in the volume of the underlying assets and liabilities, for example due to uncompensated seizures or catastrophic events; see also paragraphs 13.51 to 13.56. In the case that negative values of equity are zeroed out, the relevant changes in the value of equity should also be recorded as holding gains and losses.

Insurance, pension and standardized guarantee schemes

13.125 When the reserves for insurance and standardized guarantee schemes are denominated in domestic currency, there are generally no nominal holding gains and losses just as there are none for currency or deposits and loans. Exceptionally, if a figure for a claim outstanding has been agreed and it has been agreed to be indexed pending payment, then there may be a nominal holding gain or loss recorded for it.

13.126 As far as defined benefit pension entitlements are concerned, increases in the value of entitlements due to the unwinding of the entitlements are recorded via reinvestment of investment income payable to the beneficiaries (similar to accrued interest) and not in the revaluation account. The entitlements may also change due to other factors, such as changes in pension entitlements related to current and past service, changes in the formula used to determine benefits, demographic assumptions about life length, etc. For the recording of these changes, either as transactions, as other changes in the volume of assets and liabilities, or as revaluations, see paragraphs 13.70 and 24.186.

13.127 In the case of a defined benefit pension scheme, the pension fund may also have a claim on the pension sponsor, to cover any shortfalls on the value of accumulated assets compared to pension entitlements. This claim is directly affected by holding gains on the accumulated assets of the pension fund. The impact of these holding gains has to be reflected in the revaluation of the claim between the pension fund and the pension sponsor.

13.128 The assets the financial corporations use to meet their commitments under defined contribution pension schemes benefit from holding gains, for example investments in equity and investment fund shares/units. These holding gains directly affect the pension entitlements, and the resulting change in entitlements should also be treated as revaluations.

Financial derivatives and employee stock options

13.129 Unless it concerns over-the-counter derivatives, financial derivatives have quoted prices and thus register nominal holding gains and losses, similar to listed shares and investment fund shares/units. As explained in

chapter 25 on Selected issues in financial instruments, employee stock options may also register nominal holding gains and losses.

Other accounts receivable/payable

13.130 Other accounts receivable/payable denominated in domestic currency do not register nominal holding gains and losses, with the exception of transactions in these financial assets at a discount which does not represent charges for services provided; see paragraph 13.116. All changes in value between the start and end of the accounting period are typically due to transactions, including accrued interest, and possibly other changes in the volume of assets and liabilities. As with currency, there may be real holding gains equal in magnitude to the neutral holding losses under inflation.

Assets denominated in foreign currency

13.131 Residents may hold assets denominated in foreign currency just as non-residents may hold assets denominated in domestic currency. For balance sheet purposes, the value of an asset denominated in foreign currency is measured by its current value in foreign currency converted into the currency of the country in which its owner is resident at the mid-point of the bid and offer rate of the exchange rate on the balance sheet date. Nominal holding gains may therefore occur not only because the price of the asset in local currency changes but also because the exchange rate changes.

13.132 Neutral holding gains are calculated in the same way as for any other type of asset by calculating what the holding gains would have been if the prices of the assets, expressed in the domestic currency, had moved in the same way as the general national price level. Real holding gains, again expressed in the domestic currency, can then be derived residually by subtracting the neutral from the nominal gains. If, in addition to the asset being denominated in foreign currency, either the creditor or debtor is non-resident, the real holding gains (losses) of the creditor need not be equal to the real holding losses (gains) of the debtor when the general rates of inflation are different in the two countries.

Chapter 14: Balance sheet

A. Introduction

14.1 This chapter is concerned with measuring the stocks of assets, both non-financial and financial, and liabilities. Assets and liabilities can be aggregated across all types so as to show the total value of assets less liabilities, or net worth, of an institutional unit or a sector. Alternatively, the total value of a given type of asset across all units in the economy can be derived. Tables depicting the first sort of aggregation are called balance sheets; those depicting the second sort are called asset accounts. For both balance sheets and asset accounts, it is also important to show how the transactions and other flows recorded during the course of an accounting period explain the changes in value of the stock in question between the start and end of the period. The value of the stock at the start of the period is referred to as the opening stock and the value at the end of the period is referred to as the closing stock. Sometimes a stock level is referred to as a position, especially in the case of financial assets and liabilities.

1. Balance sheets

14.2 ***A balance sheet is a statement drawn up at a particular point in time of the values of assets owned by an institutional unit or sector and of liabilities incurred by this institutional unit or sector. For the whole economy, the balance sheet shows what is often referred to as "national wealth" – the sum of non-financial assets and net claims on the rest of the world.*** A balance sheet may be drawn up for institutional units, institutional sectors and the total economy. A similar account is drawn up showing the stock levels of assets and liabilities originating in the total economy held by non-residents and of external assets and liabilities held by residents. In *BPM* this account is called the international investment position (IIP) but is drawn up from the point of view of residents whereas in the SNA sequence of economic accounts it is drawn up from the point of view of the rest of the world with the rest of the world being treated in the same way as domestic sectors.

14.3 Assets appear in the balance sheet of the unit that is the economic owner of the asset. In many cases this unit will also be the legal owner but in the case of a financial lease, the leased asset appears on the balance sheet of the lessee, while the lessor has a financial asset of similar amount and a corresponding claim against the lessee. Furthermore, in the case of a natural resource, the legal owner, often government, may allow the resource to be used for an extended period of time in such a way that in effect the extractor controls the use of the resource during this time with little if any intervention from the legal owner. In such cases, the asset is recorded in the accounts of the legal owner and the extractor, in line with the estimated appropriation of future resource rents; as such the economic ownership of the natural resource is split between the original owner and the extractor. A fuller description of the treatment of leases is given in chapter 27 on Contracts, leases, licenses and permits, and of a fuller description of the distinction between legal and economic owner is given in chapter 4 on Flows, stocks and accounting rules.

14.4 The financial and non-financial resources at the disposal of an institutional unit or sector shown in the balance sheet provide an indicator of economic status. These resources are summarized in the balancing item, net worth. ***Net worth (B90) is defined as the value of an institutional unit's assets less the value of all its outstanding liabilities (including shares and other equity).*** As noted before, for the economy as a whole, the balance sheet shows the sum of non-financial assets and net financial claims on the rest of the world. This sum is often referred to as national wealth or national net worth.

14.5 The balance sheet completes the sequence of economic accounts, showing the ultimate result of the entries in the production, distribution and use of income, and accumulation accounts.

14.6 The existence of a set of balance sheets integrated with the flow accounts encourages analysts to look more broadly when monitoring and assessing economic and financial conditions and behaviour. Balance sheets provide information necessary for analysing a number of topics. For example, in studies of the factors determining household behaviour, consumption and saving functions often include wealth variables to capture the effects of such factors as price fluctuations in corporate securities or the deterioration and obsolescence of stocks of durable consumer goods on households' purchasing patterns. Further, balance

sheets for groups of households are needed in order to assess the distribution of wealth and liquidity.

14.7 Balance sheets allow economists to assess the financial status of a sector and permit risk analyses by a central bank, for example. For corporations, balance sheets permit the computation of widely used ratios that involve data on the level of the different items on the balance sheet. Banks and other financial corporations, for example, are required to maintain specific reserve ratios that can be monitored via a balance sheet. Non-financial corporations check certain ratios such as current assets in relation to current liabilities and the market value of corporate shares in relation to the adjusted book value. Data on the stocks of fixed assets owned by corporations, as well as by other institutional units, are useful in studies of their investment behaviour and needs for financing. Balance sheet information on financial assets held by, and liabilities owed to, non-residents are of considerable interest as indicators of the economic resources of an economy and for assessing the external debtor or creditor position of a country. For more details on analysing financial risks and vulnerabilities, see chapter 37 on From-whom-to-whom tables and related financial indicators.

2. Asset accounts

14.8 As well as drawing up a balance sheet showing the values of all assets (and liabilities) held by an institutional unit, it is possible to draw up a similar account for the value of a single type of asset (or liability) held by all institutional units in the economy. This is called an asset account. A basic accounting identity links the opening balance sheet and the closing balance sheet for a given asset or liability):

The value of the stock of a specific type of asset in the opening balance sheet

plus the total value of the same type of asset acquired, less the total value of the same type of asset disposed of, in transactions that take place within the accounting period: transactions in non-financial assets are recorded in the capital account (including depreciation and depletion) and transactions in financial assets are recorded in the financial account

plus the value of other positive or negative changes in the volume of these assets held, for example, as a result of the coming into existence of a mineral or energy resource or the destruction of an asset (as a result of war or a natural disaster): these changes are recorded in the other changes in the volume of assets account

plus the value of the positive or negative nominal holding gains accruing during the period resulting from a change in the price of the asset: these changes are shown in the revaluation account

equals the value of the stock of the asset in the closing balance sheet.

14.9 Although balance sheets are more familiar to those used to working with commercial accounts, asset accounts are particularly useful for some types of analyses. One example is in connection with environmental accounting where the asset account provides a particularly revealing picture of whether an asset is being used sustainably or not. Another example is in connection with the development of capital stock series for fixed assets. Many financial statistics describe the evolution of an individual financial asset, for example showing how the level of lending has changed over the period.

3. Structure of the balance sheet

14.10 The balance sheet records assets on the left-hand side and liabilities and net worth on the right-hand side, as do the accumulation accounts for changes in these items. In table 14.1, only a limited number of classes of assets are shown, though in principle the table can include all the detailed non-financial assets described and defined in chapter 11 on Capital accounts, and the full set of financial assets and liabilities described and defined in chapter 12 on Financial account. A balance sheet relates to the values of assets and liabilities at a particular point in time. The SNA sequence of economic accounts provides for balance sheets to be compiled at the beginning of the accounting period (with the same values as at the end of the preceding period) and at its end. The sequence of economic accounts then provides for a complete recording of the changes in the values of the various items in the balance sheet between the beginning and the end of the accounting period to which the flow accounts relate. The balancing item in the balance sheet is net worth, which, as noted earlier, is defined as the value of all the assets owned by an institutional unit or sector less the value of all its

outstanding liabilities. Changes in net worth can thus be explained fully only by examining the changes in all the other items that make up the balance sheet.

14.11 Table 14.1 consists of three sections. The first shows the opening balance sheet and net worth for each institutional sector and the total economy. For the rest of the world, the only relevant entries are for financial assets and liabilities, and net worth.

14.12 The second part of table 14.1 consists of a summary of the entries in the capital, financial, other changes in volume of assets and revaluation accounts grouped by type of asset. The entries for fixed assets, for example, show the totals of the entries for fixed assets in each of the capital account, the other changes in volume of assets and liabilities account and the revaluation account. Changes in the ownership between residents and non-residents of non-produced non-financial assets are recorded in the capital accounts. However, changes in ownership of natural resources and other immovable assets typically do not give rise to an international transaction in non-financial assets, because notional resident units are generally identified as the owners of these immovable assets. Under these entries for the changes in assets and liabilities there is a breakdown showing how much of the change in net worth is due to saving and capital transfers, other changes in the volume of assets and liabilities, and holding gains. There is no entry carried forward from the financial account because the changes in net worth due to saving and capital transfers are completely exhausted by transactions in financial and non-financial assets.

14.13 The third section of table 14.1 shows the closing balance sheet which is numerically equal, cell by cell, to the sum of the corresponding cells in the first two parts of the table. In practice, though, these figures will be determined independently and a reconciliation exercise needed to ensure the identities inherent in the table are satisfied.

Table 14.1A: Opening and closing balance sheets with changes in assets

Assets

Code	Stocks and changes in assets	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
AN	Non-financial assets	2 152	93	1 089	1 431	159	4 924			4 924
AN1	Produced non-financial assets (excluding natural resources)	1 214	67	497	816	124	2 718			2 718
AN11	Fixed assets (excluding produced natural resources)	1 166	52	467	673	121	2 479			2 479
AN12	Inventories (excluding produced natural resources)	43	0	22	48	1	114			114
AN13	Valuables	5	15	8	95	2	125			125
AN2	Non-produced non-financial assets (excluding natural resources)	14	3	6	2	0	25			25
AN21	Contracts, leases and licenses	13	3	6	0	0	22			22
AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange	1	0	0	2	0	3			3
AN23	Purchased goodwill and marketing assets						0			0
AN3	Natural resources	924	23	586	613	35	2 181			2 181
AN31	Land						0			0
AN32	Mineral and energy reserves						0			0
AN33	Biological resources						0			0
AN34	Water resources						0			0
AN39	Other natural resources						0			0
AF	Financial assets/liabilities	982	3 421	396	3 260	172	8 231	805		9 036
AF1	Monetary gold and SDRs		690	80			770			770
AF2	Currency and deposits	382		150	840	110	1 482	105		1 587
AF3	Debt securities	90	950	0	198	25	1 263	125		1 388
AF4	Loans	50	1 187	115	24	8	1 384	70		1 454
AF5	Equity and investment fund shares/units	280	551	12	1 749	22	2 614	345		2 959
AF6	Insurance, pension and standardized guarantee schemes	25	30	20	391	4	470	26		496
AF7	Financial derivatives and employee stock options	5	13	0	3	0	21	0		21
AF8	Other accounts receivable/payable	150	0	19	55	3	227	134		361

Table 14.1A (cont): Opening and closing balance sheets with changes in liabilities and net worth

Liabilities and net worth

Code	Stocks and changes in assets	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
AN	Non-financial assets									
AN1	Produced non-financial assets (excluding natural resources)									
AN11	Fixed assets (excluding produced natural resources)									
AN12	Inventories (excluding produced natural resources)									
AN13	Valuables									
AN2	Non-produced non-financial assets (excluding natural resources)									
AN21	Contracts, leases and licenses									
AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange									
AN23	Purchased goodwill and marketing assets									
AN3	Natural resources									
AN31	Land									
AN32	Mineral and energy reserves									
AN33	Biological resources									
AN34	Water resources									
AN39	Other natural resources									
AF	Financial assets/liabilities	3 221	3 544	687	189	121	7 762	1 274		9 036
AF1	Monetary gold and SDRs						0	770		770
AF2	Currency and deposits	40	1 281	102	10	38	1 471	116		1 587
AF3	Debt securities	44	1 053	212	2		1 311	77		1 388
AF4	Loans	897		328	169	43	1 437	17		1 454
AF5	Equity and investment fund shares/units	1 987	765	4			2 756	203		2 959
AF6	Insurance, pension and standardized guarantee schemes	12	435	19		5	471	25		496
AF7	Financial derivatives and employee stock options	4	10				14	7		21
AF8	Other accounts receivable/payable	237		22	8	35	302	59		361
B90	*Net worth*	- 87	- 30	798	4 502	210	5 393	- 469		4 924

Table 14.1B: Total changes in assets

Assets

Code	Stocks and changes in assets	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
AN	Non-financial assets	292	- 2	40	116	11	457			457
AN1	Produced non-financial assets (excluding natural resources)	202	- 4	29	65	7	299			299
AN11	Fixed assets (excluding produced natural resources)	174	- 2	23	52	7	254			254
AN12	Inventories (excluding produced natural resources)	25	0	1	3	0	29			29
AN13	Valuables	3	- 2	5	10	0	16			16
AN2	Non-produced non-financial assets (excluding natural resources)	- 2	1	1	1	0	1			1
AN21	Contracts, leases and licenses	- 2	1	1	1	0	1			1
AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange	0	0	0	0	0	0			0
AN23	Purchased goodwill and marketing assets	0	0	0	0	0	0			0
AN3	Natural resources	92	1	10	50	4	157			157
AN31	Land									
AN32	Mineral and energy reserves									
AN33	Biological resources									
AN34	Water resources									
AN39	Other natural resources									
AF	Financial assets/liabilities	70	228	17	205	4	524	55		579
AF1	Monetary gold and SDRs	0	10	1	0	0	11	1		12
AF2	Currency and deposits	16	8	0	64	2	90	11		101
AF3	Debt securities	10	96	4	16	0	126	14		140
AF4	Loans	19	53	3	3	0	78	4		82
AF5	Equity and investment fund shares/units	17	44	3	76	1	141	15		156
AF6	Insurance, pension and standardized guarantee schemes	1	8	1	39	0	49	0		49
AF7	Financial derivatives and employee stock options	3	8	0	3	0	14	0		14
AF8	Other accounts receivable/payable	4	1	5	4	1	15	10		25

Table 14.1B (cont): Total changes in liabilities and net worth

Liabilities and net worth

Code	Stocks and changes in assets	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
AN	Non-financial assets									
AN1	Produced non-financial assets (excluding natural resources)									
AN11	Fixed assets (excluding produced natural resources)									
AN12	Inventories (excluding produced natural resources)									
AN13	Valuables									
AN2	Non-produced non-financial assets (excluding natural resources)									
AN21	Contracts, leases and licenses									
AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange									
AN23	Purchased goodwill and marketing assets									
AN3	Natural resources									
AN31	Land									
AN32	Mineral and energy reserves									
AN33	Biological resources									
AN34	Water resources									
AN39	Other natural resources									
AF	Financial assets/liabilities	158	224	102	16	6	506	73		579
AF1	Monetary gold and SDRs	0	0	0	0	0	0	12		12
AF2	Currency and deposits	0	65	37	0	0	102	- 1		101
AF3	Debt securities	8	64	45	0	0	117	23		140
AF4	Loans	21	0	9	11	6	47	35		82
AF5	Equity and investment fund shares/units	100	39	2	0	0	141	15		156
AF6	Insurance, pension and standardized guarantee schemes	0	48	0	1	0	49	0		49
AF7	Financial derivatives and employee stock options	3	8	0	0	0	11	3		14
AF8	Other accounts receivable/payable	26	0	9	4	0	39	- 14		25
B10	*Changes in net worth, total*	204	2	- 45	305	9	475	- 18		457
B101	*Saving and capital transfers*	52	- 7	- 82	210	- 1	172	- 10		162
B102	*Other changes in volume of assets*	18	- 1	- 1	- 1	0	15	0		15
B103	*Nominal holding gains/losses*	134	10	38	96	10	288	- 8		280
B1031	Neutral holding gains/losses	82	6	27	87	6	208	- 10		198
B1032	Real holding gains/losses	52	4	11	9	4	80	2		82

Table 14.1C: Closing balance sheet with changes in assets

Assets

Code	Stocks and changes in assets	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
AN	Non-financial assets	2 444	91	1 129	1 547	170	5 381			5 381
AN1	Produced non-financial assets (excluding natural resources)	1 416	63	526	881	131	3 017			3 017
AN11	Fixed assets (excluding produced natural resources)	1 340	50	490	725	128	2 733			2 733
AN12	Inventories (excluding produced natural resources)	68	0	23	51	1	143			143
AN13	Valuables	8	13	13	105	2	141			141
AN2	Non-produced non-financial assets (excluding natural resources)	12	4	7	3	0	26			26
AN21	Contracts, leases and licenses	11	4	7	1	0	23			23
AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange	1	0	0	2	0	3			3
AN23	Purchased goodwill and marketing assets	0	0	0	0	0	0			0
AN3	Natural resources	1 016	24	596	663	39	2 338			2 338
AN31	Land									
AN32	Mineral and energy reserves									
AN33	Biological resources									
AN34	Water resources									
AN39	Other natural resources									
AF	Financial assets/liabilities	1 052	3 649	413	3 465	176	8 755	860		9 615
AF1	Monetary gold and SDRs	0	700	81	0	0	781	1		782
AF2	Currency and deposits	398	8	150	904	112	1 572	116		1 688
AF3	Debt securities	100	1 046	4	214	25	1 389	139		1 528
AF4	Loans	69	1 240	118	27	8	1 462	74		1 536
AF5	Equity and investment fund shares/units	297	595	15	1 825	23	2 755	360		3 115
AF6	Insurance, pension and standardized guarantee schemes	26	38	21	430	4	519	26		545
AF7	Financial derivatives and employee stock options	8	21	0	6	0	35	0		35
AF8	Other accounts receivable/payable	154	1	24	59	4	242	144		386

Table 14.1C: Closing balance sheet with changes in liabilities and net worth

Liabilities and net worth

Code	Stocks and changes in assets	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
AN	Non-financial assets									
AN1	Produced non-financial assets (excluding natural resources)									
AN11	Fixed assets (excluding produced natural resources)									
AN12	Inventories (excluding produced natural resources)									
AN13	Valuables									
AN2	Non-produced non-financial assets (excluding natural resources)									
AN21	Contracts, leases and licenses									
AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange									
AN23	Purchased goodwill and marketing assets									
AN3	Natural resources									
AN31	Land									
AN32	Mineral and energy reserves									
AN33	Biological resources									
AN34	Water resources									
AN39	Other natural resources									
AF	Financial assets/liabilities	3 379	3 768	789	205	127	8 268	1 347		9 615
AF1	Monetary gold and SDRs	0	0	0	0	0	0	782		782
AF2	Currency and deposits	40	1 346	139	10	38	1 573	115		1 688
AF3	Debt securities	52	1 117	257	2	0	1 428	100		1 528
AF4	Loans	918	0	337	180	49	1 484	52		1 536
AF5	Equity and investment fund shares/units	2 087	804	6	0	0	2 897	218		3 115
AF6	Insurance, pension and standardized guarantee schemes	12	483	19	1	5	520	25		545
AF7	Financial derivatives and employee stock options	7	18	0	0	0	25	10		35
AF8	Other accounts receivable/payable	263	0	31	12	35	341	45		386
B90	*Net worth*	117	- 28	753	4 807	219	5 868	- 487		5 381

4. Structure of asset accounts

14.14 An example of a set of asset accounts is given in table 14.2. The same data for the stock levels in the opening and closing balance sheets are given for the same range of assets, but instead of the breakdown by sectors, the columns show the entries for each type of asset coming from the capital and financial account, the other changes in the volume of assets and liabilities account and the revaluation account.

14.15 Unlike table 14.1, table 14.2 does not include any entries for assets held by or due to the rest of the world because it focuses on the holding by resident units of particular assets and liabilities. However, by comparing the figures for financial assets and liabilities of the same instrument, it is possible to derive the balance with the rest of the world. For example, in the opening balance sheet figures, the value of financial assets for currency and deposits is 1 482 and of liabilities is 1 471. This implies that the rest of the world has a net liability with the national economy of 11. Table 14.1 shows that the asset position of the rest of the world is 105 and the liability position 116.

Table 14.2: Asset accounts for the total economy

Code	Stocks and changes in assets	Opening balance sheet	Capital and financial account	Other changes in the volume of assets	Revaluation account: Nominal holding gains and losses	Revaluation account: Neutral holding gains and losses	Revaluation account: Real holding gains and losses	Closing balance sheet
AN	Non-financial assets	4 924	162	15	280	198	82	5 381
AN1	Produced non-financial assets (excluding natural resources)	2 718	180	- 7	126	121	5	3 017
AN11	Fixed assets (excluding produced natural resources)	2 479	145	- 2	111	111	0	2 733
AN12	Inventories (excluding produced natural resources)	114	25	- 3	7	4	3	143
AN13	Valuables	125	10	- 2	8	6	2	141
AN2	Non-produced non-financial assets (excluding natural resources)	25	0	- 1	2	1	1	26
AN21	Contracts, leases and licenses	22	0	- 1	2	1	1	23
AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange	3	0	0	0	0	0	3
AN23	Purchased goodwill and marketing assets	0	0	0	0	0	0	0
AN3	Natural resources	2 181	- 18	23	152	76	76	2 338
AN31	Land							
AN32	Mineral and energy reserves							
AN33	Biological resources							
AN34	Water resources							
AN39	Other natural resources							
AF	Financial assets	8 231	437	3	84	136	- 52	8 755
AF1	Monetary gold and SDRs	770	- 1	0	12	16	- 4	781
AF2	Currency and deposits	1 482	90	0	0	30	- 30	1 572
AF3	Debt securities	1 263	86	0	40	25	15	1 389
AF4	Loans	1 384	78	0	0	28	- 28	1 462
AF5	Equity and investment fund shares/units	2 614	107	2	32	26	6	2 755
AF6	Insurance, pension and standardized guarantee schemes	470	48	1	0	7	- 7	519
AF7	Financial derivatives and employee stock options	21	14	0	0	0	0	35
AF8	Other accounts receivable/payable	227	15	0	0	4	- 4	242
AF	Financial liabilities	7 762	427	3	76	126	- 50	8 268
AF1	Monetary gold and SDRs	0	0	0	0	0	0	0
AF2	Currency and deposits	1 471	102	0	0	30	- 30	1 573
AF3	Debt securities	1 311	75	0	42	26	16	1 428
AF4	Loans	1 437	47	0	0	29	- 29	1 484
AF5	Equity and investment fund shares/units	2 756	105	2	34	28	6	2 897
AF6	Insurance, pension and standardized guarantee schemes	471	48	1	0	7	- 7	520
AF7	Financial derivatives and employee stock options	14	11	0	0	0	0	25
AF8	Other accounts receivable/payable	302	39	0	0	6	- 6	341
B90	*Net worth*	5 393	172	15	288	208	80	5 868

B. General principles of valuation

14.16 For the balance sheets to be consistent with the accumulation accounts, every item in the balance sheet should be valued as if it were being acquired on the date to which the balance sheet relates. This implies that when they are exchanged on a market, assets and liabilities are to be valued using a set of prices that are current on the date to which the balance sheet relates and that refer to specific assets. In the case of non-financial assets, other than land, the value includes any associated costs of ownership transfer. This section contains a concise overview of the main principles and methodologies for valuing assets and liabilities; more details are provided in the annex to chapter 4 on Flows, stocks and accounting rules.

14.17 The prices at which assets may be bought or sold on markets are the basis of decisions by investors, producers,

consumers and other economic agents. For example, investors in financial assets (such as securities) and natural resources (such as land) make decisions in respect of acquisitions and disposals of these assets in the light of their values in the market. Producers make decisions about how much of a particular commodity to produce and about where to sell their output by reference to prices on markets. For a given asset, there is a clear relationship between the price paid by the purchaser and the price received by the seller. For non-financial assets other than land, the price paid by the purchaser exceeds that received by the seller by the costs of ownership transfer. In the case of financial assets, the value is the same for creditor and debtor because the costs of transferring financial assets and liabilities are treated as consumption rather than accumulation.

14.18 Ideally, observable market prices, or exchange prices, should be used to value all assets and liabilities in a balance sheet. It is important though to make a distinction between the initial recognition of assets and the subsequent valuation of assets. Regarding the initial recognition, i.e., the time at which the asset (or liability) enters the balance sheet, the relevant transaction value, in the case of financial assets adjusted for commissions and fees, should generally be used. For subsequent valuation, if there are no observable market or near-market prices because the items in question have not been purchased or sold on the market in the recent past, alternative valuation methods need to be applied to estimate what the prices would be were the assets to be acquired on the market on the date to which the balance sheet relates. This is likely to be the case for most non-financial assets, particularly when considering the second-hand nature and the partial depreciation of these assets, and also for certain financial instruments.

14.19 For valuing non-financial assets, two basic approaches can be distinguished, the first one based on the exchange prices for similar (second-hand) assets, and the second one based on the contribution of capital services, including depreciation, to the production process in the remaining service life of the asset. The latter approach is usually approximated by accumulating and revaluing acquisitions less disposals over its lifetime and adjusted for changes such as depreciation. Similar valuation issues may exist in the case of, for example, natural resources, the stocks of which are generally not traded in the market, so any values derived from occasionally traded stocks cannot be used for the valuation of similar assets, also because of the heterogeneity of the resources in question. In these cases, the value on the balance sheet can be approximated by the present value of future economic benefits derived from these resources, which represent an alternative way of estimating the capital services to the production process.

14.20 Many financial assets are traded in markets on a regular basis and therefore can be valued by directly using the price quotations from these markets. Valuation according to market value equivalent is needed for valuing financial assets and liabilities that are not traded in financial markets or are traded only infrequently. For these assets and liabilities, it will be necessary to estimate fair values that, in effect, approximate market prices. The present value of future cash flows can also be used as an approximation to market prices, provided an appropriate discount rate is used.

14.21 Non-negotiable financial assets, particularly those with a face value applicable at some point in the future (e.g., loans, deposits, and other accounts receivable/payable) are valued at nominal value (i.e., the outstanding amount the debtor owes to the creditor, which is composed of the outstanding principal amount, including any accrued interest). For a restricted group of financial instruments, however, the above valuation methods cannot be applied. Examples relate to unlisted equity and defined benefit pension entitlements. While for the latter the present value of future pension benefits is the generally accepted method for valuation, various approaches can be considered in the case of unlisted equity (see paragraphs 14.81 to 14.89).

14.22 Below, three basic methods for valuing stocks of assets and liabilities are described. These are (i) values observed in markets, (ii) values obtained by accumulating and revaluing transactions, and (iii) values obtained by applying the present value of future economic benefits. More detailed information on the valuation of assets and liabilities, including methods such as the valuation at nominal value, can be found in the annex to chapter 4 on Flows, stocks and accounting rules.

1. Value observed in markets

14.23 The ideal source of price observations for valuing balance sheet items is a market, like the stock exchange, in which each asset traded is completely homogeneous, is often traded in considerable volume and has its

market price listed at regular intervals. Such markets yield data on prices that can be multiplied by indicators of quantity in order to compute the total market value of different classes of assets held by sectors and of different classes of their liabilities. These prices are available for negotiable financial assets, regularly traded in active market with price quotations, existing transportation equipment, crops, and livestock as well as for newly produced fixed assets and inventories.

14.24 For securities quoted on a stock exchange, for example, it is feasible to gather the prices of individual assets and of broad classes of assets and, in addition, to determine the global valuation of all the existing securities of a given type. In some countries, another example of a market in which assets may be traded in sufficient numbers to provide useful price information is the market for existing dwellings.

14.25 In addition to providing direct observations on the prices of assets actually traded there, information from such markets may also be used to price similar assets that are not traded. For example, information from the stock exchange also may be used to price unlisted shares by analogy with similar, listed shares, making some allowance for the inferior marketability of the unlisted shares. Similarly, expert estimates such as appraisals of assets for insurance or other purposes generally are based on observed prices for items that are close substitutes, although not identical, and this approach can be used for balance sheet valuation. For a discussion of the special valuation problems associated with direct investment enterprises, see chapter 30 on General government and the public sector and chapter 33 on Transactions and positions between residents and non-residents.

2. Values obtained by accumulating and revaluing transactions

14.26 Most non-financial assets change in value year by year reflecting changes in exchange prices. At the same time, initial acquisition costs are reduced by depreciation (in the case of fixed assets) or other forms of deterioration over the asset's expected life. The value of such an asset at a given point in its life is given by the current acquisition price of an equivalent new asset less the accumulated depreciation. This valuation is sometimes referred to as the "written-down replacement cost". When reliable, directly observed, prices for used assets are not available, this procedure gives a reasonable approximation of what the exchange price would be were the asset to be offered for sale.

14.27 For the purpose of valuing assets using this method, the perpetual inventory method (PIM) is usually applied. The method can be considered superior to market (equivalent) prices, if the exchange prices for second-hand assets cannot be considered as representative for the future capital services, which can be derived from the continued use of the asset in production. A problem in the application of this method relates to the information needed for the application of this estimation method. Most importantly, apart from long time series on past expenditures on the purchases, including price developments, of the assets in question, information is needed on the service life; the age-price or the age-efficiency profile; and discard patterns. More detailed guidance is provided in the *OECD Manual on Measuring Capital 2009, 2nd edition*.

3. Present value of future economic benefits

14.28 For some assets, mainly relating but not necessarily confined to natural resources, the most suitable method for valuation is the present value of future economic benefits associated with the use of the relevant asset. This method can only be used if there is a direct link between the future economic benefits and the asset in question, in the sense that one can assume that there are no other assets which may have generated the benefits. Furthermore, it is also important to acknowledge that, because it may be difficult to determine the future earnings with the appropriate degree of certainty, and given that assumptions are also needed about the asset's life length and the discount factor to be applied, other possible sources of valuation should be exhausted before resorting to this method.

14.29 When estimating the future economic benefits related to natural resources, the residual value method, i.e., the output generated with the exploitation of the resources minus all costs associated with the exploitation, is typically used. Exploitation rights are often provided by government for a series of rent payments. The (present value of) actual rent payments may not account for the full value of economic benefits, or resource rents, that can be derived from these assets, and the asset in question may clearly generate a future stream of

resource rents, going well beyond the payments of rent to the legal owner. The unit having the rights to exploit the resources thus appropriates part of the resource rents, reflecting the future capital services derived from these assets. In these cases, the value of the resources in question is split between the legal owner and the unit exploiting the resources.

4. Assets denominated in foreign currencies

14.30 Assets and liabilities denominated in foreign currencies should be converted into the domestic currency at the market exchange rate prevailing on the date to which the balance sheet relates. This rate should be the mid-point between the buying and selling spot rates for currency transactions.

C. The entries in the balance sheet

14.31 Definitions of the assets in the balance sheet at the most detailed level of the classification of assets are given in chapter 11 on Capital accounts for non-financial assets and in chapter 12 on Financial account for financial assets. Definitions are repeated in this section only to the extent needed to provide the context for information on valuation specific to particular assets and other specialized topics. More details on the principles and methodologies for valuing assets are provided in the annex to chapter 4 on Flows, stocks and accounting rules.

1. Produced non-financial assets (excluding produced natural resources)

Fixed assets

14.32 In principle, fixed assets should be valued at the prices prevailing in the market for assets in the same condition as regards technical specifications and age. In practice, this sort of information is not available in the detail required and recourse must be had to valuation by another method, most commonly the value derived by adding the revaluation element that applied to the asset during the period covered by the balance sheet to the opening balance sheet value (or the time since acquisition for newly acquired assets) and deducting the depreciation estimated for the period as well as any other volume changes and the value of disposals. In the case of anticipated terminal costs, the value of these costs should be added to the value of the relevant assets, with a corresponding entry under provisions; see also the section on supplementary items below. In calculating the value of depreciation, assumptions have to be made about the decline in price of the asset and even where full market information is not available, partial information should be used to check that the assumptions made are consistent with this.

14.33 Estimates of depreciation must include the decline in value of the purchasers' costs of ownership transfer on acquisition and disposal associated with these assets. These are to be written off over the period the purchaser expects to own the asset. In many cases, this period may coincide with the expected life length of the asset but for some types of asset, particularly vehicles, the purchaser may intend to sell them after a certain period, for example, in order to acquire a newer model with a higher level of specification and lower maintenance costs. Installation costs should be treated in a similar manner. Where possible, the estimates of depreciation should also allow for anticipated terminal costs such as decommissioning or rehabilitation. Further explanation of these adjustments can be found in chapter 11 on Capital account and chapter 17 on Capital services. More detail on the application of a perpetual inventory method (PIM) of estimating the value of capital stock of fixed assets can be found in the *OECD Manual on Measuring Capital 2009, 2nd edition*.

14.34 For dwellings, there may be adequate information available from the sale of both new and existing buildings to assist in making balance sheet estimates of the total value of dwellings. However house prices depend to a considerable extent on location and the geographical pattern of sales in the period may not cover all areas adequately, in which case a technique such as a PIM will have to be used. This technique will probably also apply to many other buildings and structures since their characteristics are often specific to the structure concerned.

14.35 The value of land improvements is shown as the written down value of the improvements as originally carried

out, suitably revalued. Disregarding costs of ownership transfer, this will always be equal to the difference in value between the land concerned in an unimproved state, and its value after the improvements have been effected, though both the land and the land improvements will be subject to price changes over time.

14.36 Markets for existing automobiles, aircraft, and other transportation equipment may be sufficiently representative to yield useful price observations for valuation of these stocks or at least to use in conjunction with a set of PIM assumptions. In the case of existing industrial plant and equipment, however, observed prices on markets may not be suitable for determining values for use in the balance sheets, either because many of the transactions involve assets that for some reason are not typical, or because they embody specialized characteristics, or because they are obsolete or because they are being disposed of under financial duress.

14.37 Military weapons systems comprising vehicles and other equipment such as warships, submarines, military aircraft, tanks, missile carriers and launchers, etc. can be valued by accumulating and revaluing transactions. Depreciation is typically based on its use in providing deterrence in periods of peacetime. Destruction in war times and other decreases beyond expectation, which should be recorded as other changes in the volume of assets, may significantly affect the value of weapons systems.

14.38 Research and development expenditure carried out on contract is valued at the contract price. If carried out on own account, it is valued as cumulated costs, which should include a (net) return to capital used in the production of the relevant asset. The valuation estimates need to be increased for changes in prices and reduced because of depreciation over the life of the asset.

14.39 Even though costs of ownership transfer on non-produced assets (other than land) are shown separately in the capital account, and treated as gross fixed capital formation, in the balance sheets these costs are incorporated in the value of the asset to which they relate even though the asset is non-produced. Thus there are no costs of ownership transfer shown separately in the balance sheets. The costs of ownership transfer on financial assets are treated as intermediate consumption when the assets are acquired by corporations or government, final consumption when the assets are acquired by households, and exports of services when the assets are acquired by non-residents.

14.40 Mineral exploration and evaluation should be valued either on the basis of the amounts paid under contracts awarded to other institutional units for the purpose or on the basis of the costs incurred for exploration undertaken on own account. These costs should include a (net) return to the capital used in the exploration activity. That part of exploration undertaken in the past that has not yet been fully written off should be revalued at the prices and costs of the current period.

14.41 Originals of intellectual property products, such as computer software (including artificial intelligence), data and databases, and entertainment, literary or artistic originals should be entered at the written down value of their initial cost, revalued to the prices of the current period. Since these products will have often been produced on own account, the initial cost may be estimated by the sum of costs incurred including a (net) return to capital used in production. If value cannot be established in this way, it may be appropriate to estimate the present value of future economic benefits arising from the use of the original in production.

14.42 Subsequent copies may appear as assets (i) if the original owner has subcontracted the duties of reproducing and providing support to users of the copies, or (ii) if a copy is being used under a contract that is effectively a financial lease. In these cases, exchange prices should be available to use for valuation.

Inventories

14.43 Inventories should be valued at the prices prevailing on the date to which the balance sheet relates, and not at the prices at which the products were valued when they entered inventory. In the balance sheets, figures for inventories frequently have to be estimated by adjusting figures of book values of inventories in business accounts, as described in chapter 7 on Production account.

14.44 As is the case elsewhere in the integrated framework of the SNA, inventories of materials and supplies are valued at purchasers' prices, and inventories of finished goods and work-in-progress are valued at basic prices. Inventories of goods intended for resale without further processing by wholesalers and retailers are valued at prices paid for them, adequately adjusted for subsequent price changes, and excluding any

transportation costs that have been separately invoiced to the wholesalers or retailers and included in their intermediate consumption.

14.45 For inventories of work-in-progress, the value for the closing balance sheet should be consistent with the value of the opening balance sheet, plus any work put in place during the current period, less any work completed and reclassified as finished goods. In addition, an allowance for any necessary revaluation for changes in prices in the period must be included. As explained in chapter 7 on Production account and chapter 17 on Capital services, the time series of the value of work-in-progress put in place over a period of time should reflect the increase in value of work put in place earlier as the delivery date approaches.

Valuables

14.46 Given their primary role as stores of value, it is especially important to value works of art, antiques, jewellery, precious stones and metals at current prices. To the extent that well-organized markets exist for these items, they should be valued at the actual or estimated prices that would be paid for them to the owner were they sold on the market, excluding any agents' fees or commissions payable by the seller, on the date to which the balance sheet relates. On acquisition they are valued at the price paid by the purchaser including any agents' fees or commissions.

14.47 An approach in the absence of organized markets is to value these items using data on the values at which they are insured against fire, theft, etc., to the extent information is available.

2. Non-produced non-financial assets (excluding non-produced natural resources)

Contracts, leases and licences

14.48 Contracts, leases and licences may be marketable operating leases, licences to use certain natural resources, permits to undertake specific activities and entitlement to future goods and services on an exclusive basis. Non-fungible tokens that grant limited ownership rights are also included. As explained in chapter 27 on Contracts, leases, licenses and permits, these sorts of contracts are regarded as assets only if the existence of the legal agreement confers economic benefits on the holder in excess of the price paid to the lessor or permit issuer and the holder can realize these benefits legally and practically. It is recommended that such assets be recorded only when the value of the asset is significant and is realized, in which case a suitable exchange price necessarily exists. The asset does not exist beyond the length of the contract agreement and its value must be reduced accordingly as the remaining contract period shortens.

Crypto assets without a corresponding liability designed to act as a medium of exchange

14.49 Crypto assets without a corresponding liability designed to act as a medium of exchange are completely homogeneous assets which are often traded in considerable volume and have their market prices listed at regular intervals. Such markets yield data on prices that can be multiplied by indicators of quantity in order to compute the total market value of different classes of assets held.

Purchased goodwill and marketing assets

14.50 The balance sheet entry for purchased goodwill and marketing assets is the written-down value of the entry that appears in the financial account when an enterprise is taken over or when a marketing asset is sold. In the absence of appropriate information on the value of these assets, these entries are generally not revalued.

3. Natural resources

Land

14.51 In principle, the value of land to be shown under natural resources in the balance sheet is the value of land excluding the value of improvements, which is shown separately under fixed assets, excluding the value of buildings on the land which is also to be shown separately under fixed assets, and also excluding the value of any other natural resources above or below it. Land is valued at its current price paid by a new owner, including the costs of ownership transfer which are treated, by convention, as gross fixed capital formation and are subject to depreciation. In the case of, for example, forest land, land may also be subject to (negative) depletion, if the regenerative potential for timber production decreases (increases), due to the levels of extraction being higher (lower) than the levels of growth of trees.

14.52 Because the current market value of land can vary considerably according to its location and the uses for which it is suitable or sanctioned, it is essential to identify the location and use of a specific piece or tract of land and to price it accordingly.

14.53 For land underlying buildings, the market will, in some instances, furnish data directly on the value of the land. More typically, however, such data are not available and a more usual method is to calculate ratios of the value of the site to the value of the structure from valuation appraisals and to deduce the value of land from the replacement cost of the buildings or from the value on the market of the combined land and buildings. When the value of land cannot be separated from the building, structure, or natural resource, above or below it, the composite asset should be classified in the category representing the greater part of its value. Similarly, if the value of the land improvements (which include site clearance, preparation for the erection of buildings or planting of crops and costs of ownership transfer) cannot be separated from the value of land in its unimproved state, the value of the land may be allocated to one category or the other depending on which is assumed to represent the greater part of the value.

14.54 It is usually much easier to make a division between land and buildings for the total economy than for individual sectors or subsectors. Separate figures are needed for studies of national wealth and environmental problems. Fortunately, combined figures are often suitable for purposes of analysing the behaviour of institutional units and sectors.

14.55 Land appears on the balance sheet of the legal owner except when it is subject to a financial lease as may most often occur in connection with a financial lease over a building or plantation on the land. By convention, an exception is made for cases where the legal owner of a building is not the legal owner of the land on which the building stands but the purchase price of the building includes an upfront payment of rent on the land beneath without any prospect of further payments being due in future. In such a case, land is recorded on the balance sheet of the owner of the building on the land.

Mineral and energy resources

14.56 As the ownership of non-renewable mineral and energy resources does not change frequently on markets, it may be difficult to obtain appropriate prices that can be used for valuation purposes. Therefore, the value of non-renewable mineral and energy resources is usually determined by the present value of the expected future economic benefits, or the residual value resulting from the commercial exploitation of those resources, although such valuations are subject to uncertainty and revision.

14.57 It is frequently the case that the enterprise extracting a resource is different from the legal owner of the resource. In many countries, for example, oil resources are the property of government. However, it is the extractor who determines how fast the resource will be depleted and since the resource is not renewable on a human time-scale, it appears as if there has been a change of economic ownership to the extractor even if this is not the legal position. Nor is it necessarily the case that the extractor may have the right to extract until the resource is exhausted. Whatever the case, as the lessor often does not appropriate the full resource rent which can be derived from the exploitation of mineral and energy resources, the asset should be allocated to the lessor and the extractor in line with the estimated appropriation of future resource rents. As such, the economic ownership is split between the original (legal) owner and the extractor. More details on the recording of this split-asset approach are provided in chapter 27 on Contracts, leases, licenses and permits.

14.58 For renewable energy resources, the recording and valuation is similar to that recommended for non-renewable mineral and energy resources. However, the possibility of double-counting needs to be acknowledged. Especially in the case of privately owned land, the market value of land may already capture the additional value related to a permission to exploit for example wind energy. On the other hand, the double-counting problem does not exist in cases where the relevant land is not valued, or no land is involved (e.g., wind turbines on open seas).

Biological resources, water resources and other natural resources

14.59 For biological resources, a distinction can be made between resources yielding repeat products and resources yielding once-only products. Regarding the first category, livestock that continue to be used in production year after year should be valued on the basis of the current purchasers' prices for animals of the same age. For valuing work-in-progress, for example relating to animals yielding repeat products that are not yet mature, exchange prices may also be available. Such information is less likely to be available for trees (including shrubs) cultivated for products they yield year after year; in this case they should then be recorded at the current written-down value of the cumulated capital formation. Such capital formation, including work-in-progress, may have to be valued using the sum of costs method when produced on own account. However, the present value of future economic benefits from exploiting these resources may be an alternative and more appropriate method for approximating the value of these resources.

14.60 Regarding biological resources yielding once-only products, a distinction can be made between cultivated resources, mainly consisting of livestock raised for slaughter, agricultural crops and resources such as trees for timber production, and non-cultivated resources, mainly consisting of resources such as fish in open seas.

14.61 Regarding livestock raised for slaughter and agricultural crops, the asset only consists of work-in-progress, and can usually be valued by reference to the prices of such products on markets.

14.62 In the case of trees for timber production and similar cultivated resources, the conventional way of valuing these resources is to discount the future proceeds of selling the timber at current prices after deducting the expenses of bringing the timber to maturity, felling, etc. However, this value will typically include two types of assets, which need to be recorded separately under the relevant asset categories: (i) the work-in-progress representing the growth of trees to maturity; and (ii) the present value of future resource rents captured by the underlying asset, i.e., the forest land. As market values for forest land are typically not available, the latter present value may provide an approximation of the value of forest land.

14.63 Non-cultivated biological resources, water and other natural resources are included in the balance sheet to the extent that they have been recognized as having economic value that is not included in the value of the associated land. An example relates to fish in open seas, which are subject to some form of quota regime. As observed prices are not likely to be available, they are usually valued by the present value of the future economic benefits (i.e., the resource rent) expected from them.

4. Financial assets and liabilities

14.64 In line with the general valuation principles described above, whenever financial assets and liabilities are regularly traded on organized financial markets, they should be valued at current prices. Financial claims that are not traded on organized financial markets should be valued by the amount that a debtor must pay to the creditor to extinguish the claim. Financial claims should be assigned the same value in the balance sheets whether they appear as assets or liabilities. The prices should exclude service charges, fees, commissions and similar payments for services provided in carrying out the transactions. There is more detailed discussion on the definition of financial assets and their recording in chapter 12 on Financial account and chapter 25 on Selected issues in financial instruments.

Monetary gold and SDRs

14.65 Monetary gold is to be valued at the price established in organized markets.

14.66 The value of the SDR is determined daily by the IMF on the basis of a basket of currencies. Rates against domestic currencies are obtainable from the prices in foreign exchange markets; both the basket and the weights are revised from time to time.

Currency and deposits

14.67 For currency, the valuation is the nominal or face value of the currency. For deposits, the values to be recorded in the balance sheets of both creditors and debtors are the amounts of principal that the debtors are contractually obliged to repay the creditors under the terms of the deposits when the deposits are liquidated. The amount of principal outstanding includes bank interest (i.e., SNA interest minus implicit financial services on loans and deposits) due but not paid. Currency and deposits in foreign currency are converted to domestic currency at the mid-point of the bid and offer spot exchange rates prevailing on the date of the balance sheet.

Debt securities

14.68 Short-term securities, and the corresponding liabilities, are to be valued at their current market values. Such a valuation is particularly important under conditions of high inflation or high nominal interest rates.

14.69 Long-term securities should always be valued at their current prices on markets, whether they are bonds on which regular payments of interest are paid or deep-discounted or zero-coupon bonds on which little or no interest is paid. The price should always be that including accrued interest (the so-called "dirty" price, which is considered suitable for valuation of items in the balance sheet). In contrast, the market price of a debt security excluding the accrued interest not yet payable is called the "clean price" and requires accrued interest not yet paid to be added for use in the balance sheet. Although the nominal liability of the issuer of a long-term security may be fixed in money terms, the market prices at which fixed interest securities are traded may vary considerably in response to variations in general market rates of interest. As the issuer of a long-term security usually has the opportunity to refinance the debt by repurchasing the security on the market, valuation at market prices is generally appropriate for both issuers and holders of long-term securities, especially financial transactors who actively manage their assets or liabilities.

14.70 An index-linked debt security is also valued at its market price in the balance sheet whatever the nature of the index to which the security is linked.

14.71 If both the principal and coupons of a debt instrument are indexed to a foreign currency, the security should be treated as if it is denominated in that foreign currency with conversion to domestic currency at the mid-point of the exchange rates prevailing on the date of the balance sheet.

14.72 For analytical purposes, it is encouraged to compile, as supplementary items, statistics on the nominal value of liability positions in debt securities.

Loans

14.73 The values of loans to be recorded in the balance sheets of both creditors and debtors are the amounts of principal outstanding, i.e., the nominal value. This amount should include any accrued interest that has been earned but not been paid. In the case of loans provided by financial intermediaries, the accrued interest refers to the bank interest (i.e., SNA interest plus implicit financial services on loans and deposits). In some instances, accrued interest may be shown under accounts receivable/payable but inclusion in loans is preferred if possible. In addition to specific transactions, such as debt forgiveness or restructuring, the value of loans may be affected by value resets recognized by the creditor, such as in cases of bankruptcy, liquidation, or other factors. The other factors should be restricted to re-assessments in cases there is evidence of loan deterioration due to publicly known events (e.g., in the context of bank recovery operations).

14.74 The value of a loan does not reflect the consequences of any interest payments due after the date of the balance sheet, even if these were specified in the original loan agreement.

14.75 If there is evidence of a secondary market for a loan, and frequent market quotations are available, the loan is reclassified as a security. A loan that is traded once only and for which there is no evidence of a continuing market is not reclassified but continues to be treated as a loan. The valuation rules for debt securities and loans then apply.

14.76 Loans where the principal is index-linked, or both principal and interest are indexed to a foreign currency, should be treated in the manner described above for debt securities with these characteristics.

Non-performing loans

14.77 Despite the fact that loans are to be recorded in the balance sheets at nominal values, certain loans that have not been serviced for some time should be identified and supplementary items concerning them should be included in the balance sheet of the creditor. These loans are termed non-performing loans. A common definition of such a loan is as follows. A loan is non-performing when payments of interest or principal are past due by 90 days or more, or interest payments equal to 90 days or more have been capitalized, refinanced, or delayed by agreement, or payments are less than 90 days overdue, but there are other good reasons (such as a debtor filing for bankruptcy) to doubt that payments will be made in full. Once a loan is classified as non-performing, it (or any replacement loans) should remain classified as such until payments are received or the principal is written off on this or subsequent loans that replace the original.

14.78 Two supplementary items are recommended relating to non-performing loans. The first is the nominal value of the loans so designated, including any accrued interest and service charge. The second is the market equivalent value of these loans. The closest approximation to market equivalent value is fair value, which is "the value that approximates the value that would arise from a market transaction between two parties". Fair value can be established using transactions in comparable instruments, or using the discounted present value of future cash flows, or may sometimes be available from the balance sheets of the creditor. In the absence of fair value data, the supplementary item will have to use a second best approach and show nominal value less expected loan losses.

14.79 These supplementary items should be standard for both the government sector and the financial corporations' sector. If they are significant for other sectors, or for loans with the rest of the world, they should be shown as supplementary items.

Equity and investment fund shares or units

Equity

14.80 Listed shares are regularly traded on stock exchanges or other organized financial markets. They should be valued in the balance sheets at their current prices.

14.81 For unlisted shares, there may be no observable market prices for positions in equity not listed on a stock exchange. This situation often arises for (foreign) direct investment enterprises, private equity, equity in unlisted and delisted companies, listed but illiquid companies, joint ventures, and unincorporated enterprises.

14.82 When actual market values are not available, an estimate is required for measuring the equity of unlisted corporations at market equivalent prices. The following methods for approximating market values are preferred, as also illustrated in figure 14.1:

a. Own funds at book value: This method for valuing equity uses the value of the enterprise recorded in the books of the (foreign) direct investment enterprise, as the sum of (i) paid-up capital (excluding any shares on issue that the enterprise holds in itself and including share premium accounts); (ii) all types of reserves identified as equity in the enterprise's balance sheet (including investment grants when accounting guidelines consider them company reserves); (iii) cumulated reinvested earnings; and (iv) holding gains or losses included in own funds, whether as revaluation reserves or profits or losses. The more frequent the revaluation of assets and liabilities (at least, on an annual basis), the closer the approximation to market values. Asset and liabilities that are not revalued for several years may result in a poor reflection of the market values of equity approximated by using the own

funds at book value.

b. Recent transaction price: Unlisted instruments may trade from time to time, and recent prices, within the past year, at which they were traded may be used. Recent prices are a good indicator of current market values to the extent that conditions are unchanged. This method can be used as long as there has been no material change in the corporation's position since the transaction date. Recent transaction prices become increasingly misleading as time passes and conditions change.

c. Price to book value (P/B) or market capitalisation method: This method for valuing equity uses book values reported by enterprises with macrolevel adjustments by the statistical compiler. For untraded equity, information on "own funds at book value" can be collected from enterprises, then adjusted with ratios based on suitable price indicators, such as prices of listed shares to book value in the same economy with similar operations. Alternatively, assets that enterprises carry at cost (such as land, plant, equipment, and inventories) can be revalued to current period prices using suitable asset price indices.

Figure 14.1: Decision tree for valuing unlisted equity

14.83 In the case the above methods cannot be applied, for example due to the unavailability of relevant source data, the following methods could be used as an alternative:

a. Net asset value: Appraisals of untraded equity may be conducted by knowledgeable management or directors of the enterprise, or provided by independent auditors to obtain total assets at current value less total liabilities (excluding equity) at market value. Valuations should be recent (within the past year).

b. Price to earnings ratios: The value of unlisted equity can also be estimated by the present value of the forecast future profits. At its simplest, this method can be approximated by applying a market or industry price-to-earnings ratio to the (smoothed) recent past earnings of the unlisted enterprise to calculate a price. This method is most appropriate where there is a paucity of balance sheet

information but earnings data are more readily available.

c. Apportioning global value: The current market value of a global enterprise group can be based on the market price of its shares on the exchange on which its equity is traded, if it is a listed company. Where an appropriate indicator may be identified (for example, sales, net income, assets or employment), the global value may be apportioned to each economy in which it has (foreign) direct investment enterprises, on the basis of that indicator, by making the assumption that the ratio of the market value to sales, net income, assets or employment is a constant throughout the enterprise group. (Each indicator could yield significantly different results from the others.)

14.84 In cases where none of the above methods is feasible, less suitable data may need to be used. For example, cumulated flows or a previous balance sheet adjusted by subsequent flows may be the only sources available. Since these sources use the prices of previous periods, they should be adjusted for subsequent price developments, for example by using aggregate share price or asset price indices, and taking into account exchange rate movements, where relevant. The use of unadjusted summing of past transactions is not a recommended practice. Equity represents owners' funds. The means through which equity can be generated may take various forms, such as share issues, equity injections without any commensurate issue of shares (sometimes called "contributed surplus" or "capital contributions"), share premiums, accumulated reinvested earnings, or revaluation. While these should be taken into account when cumulated flows need to be used as a starting point to measure the value of equity, the different categories are all components of equity and need not be identified separately in other cases.

14.85 Other equity covers equity in any corporation or quasi-corporation that does not issue shares or units. Such corporations include public corporations, the central bank, some special government units, partnerships, unlimited liability companies and quasi-corporations whenever they are institutional units without shares. Other equity should be valued as equal to the value of the unit's assets less the value of its liabilities. Alternatively, equity in quasi-corporations may be valued using one of the three preferred methods for valuing unlisted equity mentioned above.

14.86 The valuation methods for unlisted equity recommended in the above can lead to negative values. This is in particular true for those methods which are based on the balance sheet items of the corporation in question. In the case of unlimited liability entities, it is recommended to always record the resulting negative equity positions. In the case of limited liability entities, however, it is recommended to record negative equity positions as the default option and only zeroing out negative positions in specific cases where the shareholder's and its affiliates' liability is strictly limited.

14.87 In respect of the latter, strictly limited liability is referring to a situation where the shareholder would not suffer any other direct economic losses than the existing equity investment in case of bankruptcy and would not be likely to take on any financial obligations in the absence of implicit guarantees or significant reputational risks. Examples of other direct economic losses would include loan losses and the realization of guarantees, while the willingness to assume new financial obligations could be related to reputational, societal, or other reasons.

14.88 Generally, it can be assumed that implicit guarantees or significant reputational risks exist when a shareholder's ownership share is at least 10%. This implies that negative direct investment equity positions should not be zeroed out unless the direct investor has no legally binding economic obligations, except for the existing equity investment, and a history of not assuming any new financial obligations in the event of bankruptcy or termination of its direct investment enterprises. Following this recommendation, negative equity positions in public corporations including central banks should never be zeroed out.

14.89 Countries are encouraged to show negative equity positions as supplementary "of which" items under the relevant equity assets and liabilities.

Investment fund shares or units

14.90 Shares (or units) in money market funds or in other investment funds should be valued in a manner similar to the proposals under equity. Listed shares should be valued using the market price of the share. Unlisted shares should be valued according to one of the methods described above for unlisted equity.

Insurance, annuities, pension and standardized guarantee schemes

Non-life insurance technical reserves

14.91 The amount of the reserves for non-life insurance to be recorded in the balance sheet covers actual premiums paid but not earned at the date for which the balance sheet is drawn up plus the amount set aside to meet outstanding claims. This latter amount represents the present value of the amounts expected to be paid out in settlement of claims, including disputed claims, as well as allowances for claims for incidents which have taken place but have not yet been reported.

Life insurance and annuity entitlements

14.92 The amount to be recorded under the stock values for life insurance and annuity entitlements is similar to that for non-life insurance technical reserves in that it represents reserves sufficient to meet all future claims. However, in the case of life insurance, the level of the reserves is considerable and represents the present value of all expected future claims. In the commercial accounts of insurance corporations, some of these will be described as provisions for bonuses and rebates. These are the result of the insurance industry's practice of smoothing benefits over time and possibly retaining some benefits until the policy matures.

Pension entitlements

14.93 The entitlements due under pension schemes comprise two elements: one when the formula determining the amount of the pension benefits is agreed in advance (as under a defined benefit scheme) and one where the amount of the pension benefits depends on the performance of assets acquired with the future pensioner's contributions (a defined contribution scheme). For the former, an actuarial estimation of the liabilities of the pension provider is used; for the latter the value is the value of the assets held by the pension fund on behalf of the future beneficiaries. The basis on which pension entitlements are calculated and the alternative means of representing these in the sequence of economic accounts of the SNA are described in detail in chapter 24 on Insurance and pensions.

Claims of pension funds on pension sponsors

14.94 When a pension sponsor is responsible for meeting the liabilities of a defined benefit pension fund, the pension fund has a claim on the pension sponsor equal to the shortfall of the assets accumulated in the pension fund as compared to the pension entitlements. In the case of a surplus, a claim with a negative value is recorded. In this way, the net worth of the pension fund remains equal to zero at all times.

Provisions for calls under standardized guarantees

14.95 The value to be entered in the balance sheet for provisions for calls under standardized guarantees is the expected level of claims under current guarantees less any expected recoveries. Strictly speaking, these amounts will represent a degree of double counting in the assets of the units benefiting from the guarantees. For example, if financial corporations make 1 000 loans of 20 each that are covered by guarantees and 10 are expected to default, the value of the loans made is still shown as 20 000 and in addition the lenders have an asset of 200 in respect of the expected calls under the guarantee. However, the unit offering the guarantee has a liability of 200 with no matching asset so the net worth for the whole economy is not overstated.

Financial derivatives

14.96 The treatment of derivatives is discussed in more detail in chapter 25 on Selected issues in financial instruments. Financial derivatives should be included in the balance sheets at market value. If market value data are unavailable, other fair value methods to value derivatives, such as options models or present values, may be used.

Options

14.97 Options should be valued in the balance sheets as either the current value of the option, if this is available, or the amount of the premium payable. A liability should be entered in the sector of the writer of the option to represent either the current cost of buying out the rights of the option holder or the accrual of a holding gain. Depending on how margin systems operate, it may be appropriate to enter zero for the value of an option, as any profits (losses) will have been received (paid) daily by the holder. The counterpart of these asset entries should be entered as liabilities.

Forwards

14.98 A forward is recorded at market value. When payments are effected, the value of the asset and associated liability is amortized and subsequently reflected in the balance sheet value on the appropriate accounting date. The market value of forward contracts, including credit default swaps, can switch between an asset position and a liability position between accounting dates depending on price movements in the underlying item(s). All price changes, including those that result in such switches, are treated as revaluations.

Employee stock options

14.99 Employee stock options (ESOs) should be valued by reference to the fair value of the equity instruments granted. The fair value of equity instruments should be measured at grant date using a market value of equivalent traded options (if available) or using an option pricing model (binomial or Black-Scholes) with suitable allowance for particular features of the options. The International Accounting Standards Board (IASB) gives detailed recommendations on how ESOs may be valued and their recommendations are likely to be followed by corporations using ESOs as a form of remuneration for their employees. The value of the ESO alters between grant date and vesting date and then between the vesting date and exercise date as the value of the shares covered changes. Chapter 25 on Selected issues in financial instruments covers ESOs in more detail.

Other accounts receivable/payable

14.100 Trade credit and advances and other items due to be received or paid (such as taxes, dividends, rent, wages and salaries, and social contributions) should be valued for both creditors and debtors at the outstanding amount the debtors are contractually obliged to pay the creditors when the obligation is extinguished. Interest due but not paid on other accounts receivable/payable may be included here but, in general, interest due but not paid on deposits, debt securities and loans is recorded as increasing the value of the asset concerned. Interest accruing on deposits and loans may have to follow national practices and be classified here if it is not incorporated into the outstanding amount of the relevant loan or deposit.

14.101 Emission permits are treated as prepaid taxes on production. As such, they are also recorded as part of other accounts receivable/payable. They should be valued at their nominal value, despite the fact that they may be tradable and have a market price which is different from the prepaid taxes on production at issuance prices.

5. Net worth

14.102 Net worth is the difference between the value of all financial and non-financial assets and all liabilities (including shares and other equity) at a particular point in time. For this calculation, each asset and each liability is to be identified and valued separately. As the balancing item, net worth is calculated for institutional units and sectors and for the total economy.

14.103 For government, households and NPISHs, the value of net worth is clearly the worth of the unit to its owners. In the case of quasi-corporations, net worth is zero, because the value of the owners' equity is assumed to be equal to its assets less its liabilities. For other corporations, the situation is less clear-cut.

14.104 In the SNA sequence of economic accounts, net worth of corporations is calculated in exactly the same way

as for other sectors, as the sum of all assets less the sum of all liabilities. In doing so, the value of shares and other equity, which are liabilities of corporations, are included in the value of liabilities. Shares are included at their market price on the balance sheet date. Thus, even though a corporation is wholly owned by its shareholders collectively, it is seen to have a net worth (which could be positive or negative) in addition to the value of the shareholders' equity.

14.105 An alternative calculation is similar to the treatment of quasi-corporations. This calculates the value of the shareholders' equity in such a way that net worth is zero. This calculation of shareholders' equity is called own funds and is calculated as the sum of its assets less the sum of its liabilities other than shares.

14.106 A non-zero value of own funds comes about through a number of factors. One reason is the existence of "assets" that are not recognized as such in the integrated framework of the SNA such as goodwill and marketing assets. Another is that the view in the SNA sequence of economic accounts that the value of some financial assets, such as bonds and non-performing loans, may not coincide with a fair value approach. Some or all of these items may be available from the balance sheet of the corporation and it may be useful to compare the sum of these with the amount derived as the difference between net worth and the value of owner's equity. (For unlisted shares, indeed, this may be one way to value these shares.) Further, the market value of shares reflects market sentiment about future income streams which may fluctuate with much more volatility than the underlying value of the corporation.

14.107 Own funds include accumulation over time of retained and reinvested earnings. Once current transfers receivable are added to entrepreneurial income and current transfers payable (and the adjustment for the change in pension and non-pension entitlements) are deducted, what remains is available for distribution in the form of dividends. Retained earnings are the amount of a corporation's income available for distribution as dividends that is not so distributed. This amount may be negative on occasion, representing a withdrawal from own funds. In the case of a foreign direct investment enterprise a proportion of retained earnings is treated as reinvested earnings, the proportion depending on the extent of the direct investor's ownership of the corporation. These earnings are recorded in the financial account as being reinvested in the corporation and form part of own funds at that time.

14.108 From time to time, some of own funds may be assigned to (or withdrawn from) either general or special reserves. They may be augmented by an injection of capital by the owners or by the receipt of investment grants.

6. Supplementary items

14.109 In addition to the supplementary items on non-performing loans, the SNA encourage the compilation of supplementary items to the balance sheets in order to show items not separately identified as assets in the sequence of economic accounts that are of more specialized analytic interest for particular institutional sectors. These relate to consumer durables, concessional lending, foreign direct investment, and provisions.

Consumer durables

14.110 Households acquire consumer durables such as cars and electrical goods. However, these are not treated as being used in a production process giving rise to household services. They therefore do not constitute fixed assets and are not shown as such in the balance sheet. Nevertheless, it is useful to have data on these goods and so consumer durables are included in the balance sheets as a supplementary item. The stocks of consumer durables held by households are to be valued at current prices, both gross and net of accumulated depreciation equivalent to depreciation of fixed assets. The figures shown as supplementary items in the balance sheet should be net of these accumulated charges.

14.111 Durable goods held by owners of unincorporated enterprises may be used partly by the enterprise for production and partly by members of the household for final consumption. The same holds for durable goods such as vehicles which are partly used by self-employed to offer taxi services to third parties. The values shown in the balance sheet for the enterprise, or self-employed, should reflect the proportion of the use that is attributable to the enterprise, but this may not always be known in practice.

Concessional lending

14.112 Institutional units may lend to other units under conditions in which the contractual interest rate is intentionally set below the market interest rate that would otherwise apply. The degree of "concessionality" can be enhanced with grace periods, frequencies of payments and a maturity period favourable to the debtor. Since the terms of a concessional loan are more favourable to the debtor than market conditions would otherwise permit, concessional loans effectively include a transfer from the creditor to the debtor. In the sequence of economic accounts, adjustments are only made for concessional loans provided by employers to employees, whereby the difference between the market interest rate and the concessional rate is recorded as remuneration of employees.

14.113 In view of its importance for various analytical purposes, it is encouraged to compile, as supplementary items, statistics on concessional loans provided by governments and international organisations. The supplementary items consist of the nominal value of such loans in the sequence of economic accounts, as well as the adjusted nominal value of these loans. The latter value is to be calculated by adjusting the original nominal value with the present value of the future concessional elements. Alternatively, the adjusted nominal value could be estimated by the present value of future payments discounted with the market interest rate. The difference between the two nominal values is considered to be a capital transfer at inception. The latter is recommended, because the decision to provide a lower interest rate for a certain period of time at the start of the loan, or the decision to change the conditions of a loan, is an explicit policy decision at the time of inception or at the time of changing the conditions.

Foreign direct investment

14.114 Just as flows of foreign direct investment are shown in the financial account, so it is interesting to have similar items in the balance sheets showing the stock of assets and liabilities invested in the country by non-residents and invested abroad by residents. All sectors may have foreign direct investment abroad; only financial and non-financial corporations (excluding non-profit institutions within them) may receive foreign direct investment from abroad.

Accounting for provisions

14.115 To arrive at a better understanding of (potential) financial vulnerabilities, it is encouraged to compile supplementary items for (changes in) three types of provisions, as follows:

a. Provisions related to financial assets: This category concerns provisions which have a clear relationship with financial assets. They include provisions for losses on loans and other financial assets. Provisions for calls under standardized guarantees are not included, as these provisions are recognised as liabilities in the sequence of economic accounts.

b. Provisions related to non-financial assets: This category concerns provisions which have a clear relationship with non-financial assets such as mineral and energy resources. They include but are not necessarily confined to anticipated terminal costs (e.g., future obligations to remove offshore oilrigs and to restore sea beds), and potential compensation payments for damages caused by process of extracting natural resources (e.g., damages caused by oil spills or damages to neighbouring dwellings and other structures resulting from mining activities).

c. Provisions unrelated to asset ownership: This category includes, for example, provisions made in respect of warranties, customer refunds, and the like. Provisions for major compensation payments related to, for example, health damages caused by produced goods and services, are also included.

Chapter 15: Supply and use tables

A. Introduction

15.1 The supply and use tables are an integral part of the integrated framework of national accounts. They form the detailed framework for the compilation of a single and coherent estimate of GDP, both in current prices and in volume terms. The supply and use tables provide a powerful framework to balance and integrate all the components of the production, income and expenditure approaches to measuring GDP, and provide key links to other parts of the SNA framework and beyond.

15.2 In their simplest form, the supply and use tables describe how products (goods and services) are brought into an economy (either as a result of domestic production or imports from other countries) in the supply table, and how those same products are used (as intermediate consumption; final consumption by households, non-profit institutions serving households (NPISHs), general government and the central bank; gross capital formation; and exports) in the use table.

15.3 The supply and use tables also provide the link between components of output, inputs and gross value added (GVA) by industry. Although typically they show only the industry dimension, supply and use tables can also be formulated to show the role of different institutional sectors (for example, non-financial corporations, government, and others) providing an important linking mechanism to the sequence of economic accounts (goods and services account, production account, generation of earned income account and the capital account).

15.4 Many countries primarily compile supply and use tables in the course of producing their key national accounts estimates, thereby improving the coherency and consistency of these estimates.

15.5 Importantly, and by design, these interlinkages facilitate data confrontation and the examination of the consistency of data on goods and services obtained from different statistical sources, such as business surveys, household surveys and administrative data, within a single detailed framework. They thus provide a powerful mechanism for feedback on the quality and coherency of primary data sources.

15.6 For a full understanding of international interdependencies and their impact on important policy areas, such as trade, competitiveness and sustainable development, there is also an increasing need to view production and consumption through a global value chain lens. In other words, multi-country supply and use tables and input-output tables have become essential tools to inform policy and policymakers. This has led to the creation of various multi-country databases to allow analyses not only of the national economy but also of the interlinkages between economies covered by the multi-country tables.

15.7 The supply and use tables (and input-output tables) inform several national and international policy issues, including:

- Digitalisation, for example, digital supply and use tables (see chapter 22 on Digitalisation).
- Multi-country supply and use tables and multi-country input-output tables (see chapter 36 on Input-output tables).
- Globalisation, for example, extended supply and use tables, global value chains and trade in value added (see chapter 23 on Globalisation and chapter 36 on Input-output tables).
- Climate change, for example, physical supply and use tables, environmentally-extended input-output tables (see chapter 35 on Measuring the sustainability of well-being).
- Productivity, for example, KLEMS-type productivity measures (see chapter 18 on Measuring prices, volumes and productivity).
- Well-being and sustainability, for example, various extended supply and use tables covering education, health and unpaid household service work (see chapter 34 on Measuring well-being).

15.8 This chapter covers a concise overview of supply and use tables (section B); a more detailed overview of the supply table (section C) and the use table (section D); a further elaboration of the use table (section E); and

a numerical example of a supply and use table (section F). More detailed information is available in the *UN Handbook on Supply and Use Tables and Input-Output Tables with Extensions and Applications*.

B. Overview

1. Product balances

15.9 The amount of a product available for use within the economy must have been supplied either by domestic production or by imports. The same amount of the product entering an economy in an accounting period must be used for intermediate consumption, final consumption, capital formation (including changes in inventories) or exports. These two statements can be combined to give a statement of a product balance:

> Output + imports = intermediate consumption + final consumption expenditure + capital formation + exports

15.10 The accounting rules from chapter 4 on Flows, stocks and accounting rules including the time of recording and the valuation rules from chapter 7 on Production account and elsewhere apply to each of the entries in this identity. The uses of products are usually valued at purchasers' prices and the output at basic prices, thus it is necessary to add distribution margins and transport margins, and taxes on products less subsidies on products to the left-hand (or supply) side of the identity so both sides are expressed in purchasers' prices. Thus a fuller articulation of ***the product balance for any product recognizes that the sum of output at basic prices plus imports plus distribution margins and transport margins plus taxes on products less subsidies on products is equal to the sum of intermediate consumption, final consumption and capital formation, all expressed at purchasers' prices, plus exports***. The treatment of margins and taxes is complex and is described at length in section C. The valuation applied to imports and exports requires special consideration and is described in sections C and D below.

15.11 A product balance is an especially powerful tool for a compiler as is best illustrated by example. Typically the domestic production of tobacco products, mainly cigarettes, is well measured but consumption of cigarettes is not, because of the reluctance of respondents to report accurately how much is spent on them in a household budget survey. Assuming that output, imports and exports are well measured (allowing for exhaustiveness, in this case smuggling of tobacco) then the identity of the product balance can be used to generate data for consumption that will be consistent with other items in the identity. The compiler can then use expertise to reach a balance by adjusting the components as necessary.

15.12 It is not always final consumption that is the weakest component of the identity. In some cases, consumption data may be more reliable than output data. For example, in the case of taxi services where much may be supplied by unregulated and unmeasured activity, the estimate of how much households spend on taxis may help improve the estimates of output to include these aspects of the informal economy.

15.13 Even for items where informal activity is not an issue, a product balance may be useful. Aircraft manufacture is a long process. Work-in-progress may be measured either by the amount the manufacturer claims to have completed or by the amounts the potential purchaser has paid for by means of stage payments. These two sources of data need to be reconciled with adjustments in the financial accounts for accounts receivable/payable as necessary.

2. The goods and services account

15.14 If a product balance is drawn up for all goods and services in the economy (either individually or in groups of products) and these are aggregated, the totals for output, imports, intermediate consumption, final consumption, capital formation and exports must be equal to the corresponding items identified in the sequence of accounts elaborated in previous chapters. The distribution and transport services embodied in margins represent products that may also be seen as being used for intermediate or final consumption, capital formation or exports. The fact that the value of the margins may be included with the value of the goods they apply to does not invalidate the identity. Thus when product balances are aggregated across all goods and services, these margins are necessarily included and do not need to be specified additionally.

15.15 Since the figures for output and intermediate consumption correspond to the entries for output and intermediate consumption in the production account, the identity of the sum of all product balances may be rearranged to become the goods and services account, which reads:

> Output - intermediate consumption + taxes on products – subsidies on products = final consumption expenditure + capital formation + exports – imports.

As explained in chapter 7 on Production account , the left-hand side of this identity is equivalent to GDP at market prices. The right-hand side is therefore also equal to GDP at market prices and is the well-known statement of GDP often described as the "expenditure approach". By contrast, the definition coming from the left-hand side of the identity is known as the "production approach" to GDP. The components of the "income approach" to GDP reflect a decomposition of GDP at market prices by type of income.

15.16 The goods and services account is one of the most basic, if not the most basic, identity in the integrated framework of the SNA. It captures the idea that all output from within the production boundary plus imports must be accounted for in one of the other two basic activities of the integrated framework of the SNA, consumption of goods and services or accumulation of goods and services. Without the goods and services account, a supply and use table would not be fully articulated and exhaust all products available within the economy. The whole sequence of economic accounts can be viewed as built around the goods and services account by adding transactions relating to the generation, distribution and redistribution of income and saving. When these transactions are aggregated across all institutional sectors and the rest of the world, total resources are equal to total uses. If these were to be "consolidated" out of the sequence of economic accounts, only the goods and services account would be left.

15.17 Every row of the supply and use tables is a reminder of the basic identity of the goods and services account.

3. Supply and use tables

15.18 With a complete set of product balances, supply and use tables can be created. Supply and use tables exist in pairs with common valuation and level of detail as regards the products identified. The most common format of supply and use tables is at purchasers' prices. A use table at purchasers' prices consists of a set of product balances covering all products available in an economy arranged in the form of a rectangular table with the products, valued at purchasers' prices, appearing in the rows and the columns indicating the disposition of the products to various types of uses. A supply table at purchasers' prices consists of a rectangular table with the rows corresponding to the same groups of products as the matching use tables and columns corresponding to the supply from domestic production valued at basic prices plus columns for imports and the valuation adjustments necessary to have total supply of each (group of) product(s) valued at purchasers' prices.

15.19 Sections C and D below describe the supply and use tables respectively.

15.20 Supply and use tables are a necessary first step in preparing input-output tables as described in chapter 36 on Input-output tables but have important uses on their own, both analytically and as quality control tools. When supply and use tables are first prepared, they are unlikely to balance and until they are brought into balance, GDP measured from the production approach will differ from the expenditure approach and the income approach to measuring GDP. Supply and use tables have a major advantage in providing a rigorous framework to eliminate discrepancies in the measured flows of goods and services throughout the economy to ensure the alternative measures of GDP converge to the same value.

15.21 Some countries with less advanced statistical systems still have difficulty in deriving a detailed breakdown of household consumption expenditure from direct sources on a regular basis. Such a breakdown is necessarily available from within a set of supply and use tables. One benefit of this is that the proportionate distribution of expenditure on different product groups can be compared with the weights used in a consumer price index (CPI) as a means of checking both the CPI weights and the supply and use tables for plausibility and consistency.

4. The industry dimension

15.22 It is conceptually possible to compile a set of supply and use tables with intermediate consumption treated in

total only, with the use table showing how much of each product is used for intermediate consumption but with no further detail. Such a presentation has little value as either a compilation or analytical tool but from the earliest elaboration of supply and use tables and input-output tables onwards, further detail was introduced to relate the products used in the economy to the units producing them. The simplest case assumes that it is possible to establish a one-to-one correspondence between products and producing units. This indeed is the motivation for defining an establishment as a unit producing only one type of product. However, there is no necessary reason for the match to be one-to-one and many countries now work with tables where many more groups of products are distinguished than groups of producing units. The most important reason for this is that most units produce very many products, for example, a footwear manufacturer may make sandals, sports shoes, uniform boots and fashion shoes, and it would be neither practicable nor interesting to try to create an establishment for each type of footwear.

15.23 Once a set of producing units is determined, the domestic supply table is expanded to show exactly which products that each of the groups of producing units supplies and the use table is expanded to show intermediate demand for each of these groups of producing units. In addition, extra information relating to the producing units is appended below the demand for intermediate consumption, so that the columns corresponding to the producing units contain the components of value added as well as total output. In other words, the identity that

intermediate consumption + value added = output

is apparent for each group of producing units (industry) in addition to the aggregate product-based equivalent. Further information relating to capital formation and number of employees, for instance, may also be added. These extensions are discussed in section E.

5. A numerical example

15.24 Tables illustrating supply and use tables are shown in section F with associated descriptive text. These tables contain all the features described in the chapter but at a high level of aggregation since they are intended for illustrative purposes only. In addition, some extracts from these tables are included in the text to illustrate the features being described.

C. The supply table

15.25 The main part of the supply table is a sub-table of products by industry showing what each industry produces by type of product.

1. Products and producing units

15.26 While it is possible to compile a supply table using enterprises as the basic building block, it is more common and generally recommended to work with establishments. As noted in the introduction, the idea of an establishment as a unit where only one type of product is produced derives from the idea of an input-output table where there is a one-to-one correspondence between the groups of products distinguished and the groups of producing units distinguished. All the conventions described in chapter 6 on Enterprises, establishments and industries about when an establishment is identified apply in the context of using establishment data for a supply table; indeed although establishment-level data may be used in the context of short-term economic indicators, they are used in the integrated framework of the SNA only in the context of the supply and use tables.

15.27 The basis for grouping products (i.e., goods and services, including knowledge-capturing products, that result from a process of production) is most commonly an aggregation of *CPC* and the resulting groups are described as “products”. The basis for grouping producing units is most commonly *ISIC* and the resulting groups are often described as “industries”.

15.28 In the case where there are the same number of groups of producing units as there are products, there will be a large entry in one cell of the column representing the principal product of that group of producing unit, that

is the product that gives rise to the largest proportion of value added. If the group of producing units contains only pure establishments, there will be no other entries in the column but most often there will be some secondary production showing as smaller entries in other cells in the column.

15.29 When there are the same breakdown of groups of producing units as groups of products, the rows and columns are arranged so that the entries for the principal products fall on the diagonal of the resulting table.

15.30 In practice, it is common for there to be more products than types of producing units. For example, it is interesting to specify different sorts of agricultural crops but less interesting or practical to distinguish farms specializing in each of the possible sorts of crop. For this reason, the supply table may be rectangular with more rows than columns but arranged with similar products in adjacent rows so that an aggregation of the rows for similar products would again produce a square table.

15.31 The greater the amount of product detail that is used, the more there will be a scatter of entries around the entries for the principal products, for example when a farm produces more than one crop or a manufacturer of machinery produces different types of machines. At a level of detail such as "agricultural product" and "machinery" these off-diagonal elements will be merged in a larger diagonal element.

15.32 However, as well as similar products, many establishments produce some retail and wholesale services, some transport services and some construction output, the last sometimes being produced for own use as capital formation.

2. Accounting rules

15.33 All the rules described in chapter 4 on Flows, stocks and accounting rules apply to the entries in the supply and use tables.

15.34 Although the supply and use tables do not record property income flows, the financial services associated with the payment of interest and with the acquisition and disposal of financial assets and liabilities are recorded in the supply and use tables. Chapter 25 on Selected issues in financial instruments explains in detail what sorts of financial service flows are associated with transactions in financial assets and property income flows.

15.35 The re-routing of flows associated with margins is described below under valuation.

3. Production

15.36 The principles for recording output in the supply and use tables are exactly the same as those for recording output in the production account, as described in chapter 7 on Production account. It should be emphasized that all the concepts and definitions of the integrated framework of the SNA elaborated in previous chapters describing the sequence of economic accounts apply equally and exactly to supply and use tables and input-output tables. The only difference is in the manner of presentation of the accounts, not in the underlying fundamentals of the integrated framework.

15.37 As noted in the introductory section, the producing units to be identified in the supply and use tables are determined by reference to an industrial classification such as *ISIC*. However, it may also be useful to distinguish which producing units are market and which are non-market. This may be applied generally or to just those groups where significant production on both bases is common, for instance in health and education services. Similarly, production on own account may also be of special interest and can be distinguished within relevant *ISIC* categories, such as construction and computer software.

15.38 In general, in keeping with the guidance on their treatment given in chapter 5 on Institutional units and sectors, economic territory and residence and chapter 6 on Enterprises, establishments and industries, ancillary activities are not treated as giving rise to products that are recorded as output in the accounts. One exception is when some products are used both for own ancillary use and are supplied to another unit. Another exception is where it is appropriate to treat the unit producing the ancillary products as a separate establishment, for example because of its geographical location where it may be a source of significant employment.

15.39 Bearing in mind the discussion about units, the production part of the supply table is a table with rows corresponding to product groups and columns corresponding to groups of producing units. The entries in this table show the value of output of each type of product by each group of producing unit. The goal of creating establishments is to partition horizontally and vertically integrated enterprises so that each row and column of the table is dominated by one entry with only a few non-zero entries, which are typically fairly small, elsewhere. There is more discussion on this sort of partitioning of enterprises in chapter 6 on Enterprises, establishments and industries.

15.40 Table 15.1 shows columns 16, 20, 24 and 25 of the supply table shown in table 15.12. In the full version it is clear that most entries in the sub-table for market production are zero. Even in the abbreviated table, this is obvious for production for own final use and for non-market production.

Table 15.1: Abbreviated version of the production part of the supply table

	Market production	Production for own final use	Non-market production	Total
Agriculture, forestry and fishery products (0)	78	9	0	87
Ores and minerals; electricity, gas and water (1)	195	0	0	195
Manufacturing and other industrial products (2-4)	1 707	7	0	1 714
Constructions and construction services (5)	213	31	0	244
Trade, accommodation, food and beverage servicing services; transport services (6)	233	0	0	233
Financial and related services (7 less 72-73)	144	0	2	146
Real estate services; and rental and leasing services (72-73)	100	95	0	195
Business and production services (8)	256	0	0	256
Education, human health and social care services (92-93)	63	0	215	278
Other services (94-99)	86	5	0	91
Public administration and related services (91)	0	0	178	178
Total	**3 075**	**147**	**395**	**3 617**

4. Imports

Classification

15.41 In order to add imports to domestic production to reach total supply, imports must be classified by products in a manner consistent with that used for domestic production. This is not always straightforward since imports (and exports) are classified not according to *CPC* but according to, for example, the *HS*, *SITC* or *EBOPS*. Finding a level of aggregation of the trade data that is sufficiently detailed but also consistent with domestic production may be a factor in determining the level of detail to be adopted in the supply and use tables.

Goods for processing

15.42 The traditional view of an input-output table or a supply and use table was that it portrayed the physical or technological process of production. The aim was to show which products were combined, and in what proportions, to make other products. One consequence of this, in combination with the idea of establishments, was that if one establishment of an enterprise was responsible for making steel and another for making steel products, the steel from the first establishment was shown as being delivered (or "sold") to the second. This meant the final customer for the steel products bought them entirely from the second establishment and the production account showed the value of the steel included in both intermediate inputs and output. A similar approach was taken for goods sent abroad for processing but then returned to the original economy.

15.43 In terms of the integrated framework of the SNA, this approach amounts to imputing a change of ownership when goods are delivered from the first unit to the second. For imports and exports, this is particularly inappropriate in the case of goods sent abroad for processing since to ensure consistency in the integrated framework of the SNA, financial transactions that do not take place have to be imputed to match the imputed change in ownership of the goods. In reality, though, the unit processing (processor) the goods assumes no risk associated with the eventual marketing of the products; the risk remains with the legal owner (principal). The processor is not at risk from (and does not benefit from) any unexpected changes in prices of either the components or the final product. The only risk the processor accepts is limited to meeting the contractual commitment in the most cost-effective manner. The value of the output of the processor is the fee agreed for the processing. Any other change in the value of the goods and services processed, for example due to holding gains or losses or to the incorporation of R&D or the economic benefits of marketing assets accrue to the legal owner of the product. When the processing is carried out abroad, exports from the processing country consist only of the processing fee.

15.44 With the increasing importance of outsourcing under globalization of markets, there is great interest in knowing where the returns to labour arise and how far operating surplus accrues to the processor and how far to the unit that contracts the processing.

15.45 The pattern of inputs for an establishment processing goods on behalf of another unit is quite different from the pattern of inputs when the establishment is manufacturing similar goods on their own account. A simple illustration may be given by referring to crude petroleum. The unit refining on own account has intermediate consumption of crude oil and output of refined petroleum products; the unit processing (processor) on behalf of another unit (principal) has all the other similar inputs and uses the same sort of fixed capital but shows neither the crude petroleum nor the refined products in its production account. For similar amounts of crude oil processed, the value added and other inputs will be comparable and when the process is carried out for a non-resident, imports will exclude the crude oil and exports will exclude the refined products but include the processing fee. As a result, the current external balance will be unaffected by this treatment. The result of recording only the processing fee rather than the full value of the goods processed does, however, affect the ratios of imports and exports to GDP and gives a more realistic picture of the extent to which domestic financial resources are required to fund imports or benefit from exports.

15.46 Similar consequences hold for processing by resident producers. There is discussion in chapter 7 on Production account about whether or not to record deliveries from one establishment to another in the same enterprise.

15.47 Measuring goods for processing by the processing fee instead of by the full value of the processed goods changes the nature of input-output coefficients. They no longer represent the technological structures of an industrial process but an economic process. Changes in coefficients may result not from changes in technology but from changes in the proportion of oil (in this case) processed on own account and processed on behalf of another unit. More extensive discussion on the treatment of goods for processing (and the similar but distinct case of merchanted goods) is given in chapters 23 on Globalisation and chapter 33 on Transactions and positions between residents and non-residents but the consequences for supply and use tables and input-output tables are extremely significant and change many of the traditional perceptions about what information is conveyed in these tables.

15.48 Interpreting input-output coefficients as representing the technological structure of an industry does not recognize the role of other factors, such as whether fixed capital is rented or owned, the importance of ancillary activities or the consequences of a statistician balancing the tables. These factors still play an important part in determining input-output coefficients but where extensive processing of goods by third parties occurs, this may be the largest single factor contributing to change in the coefficients.

5. Valuation

15.49 As explained in the introduction, in order to balance total supply with total use, both must be valued in the same way. The most usual way to achieve this is to raise total supply from basic prices to purchasers' prices and this is the approach described here. However, the alternative, of reducing total use to basic prices is also considered in section E under discussion about deflating the supply and use tables to prices of another year.

15.50 It is helpful to begin by recapitulating the distinction between the purchaser's, producer's and basic price as explained in chapter 7 on Production account and, because of the complexity of VAT and similar deductible taxes, to itemize the difference between the three ways in which VAT is recorded:

a. Invoiced VAT is the VAT payable on the sales of a producer; it is shown separately on the invoice that the producer presents to the purchaser;

b. Deductible VAT is the VAT payable on purchases of goods or services intended for intermediate consumption, gross fixed capital formation or for resale that a producer is permitted to deduct from his own VAT liability to the government in respect of VAT invoiced to his customers; and

c. Non-deductible VAT is VAT payable by a purchaser that is not deductible from his own VAT liability, if any.

15.51 Bearing these ways of recording VAT in mind, the price bases in the integrated framework of the SNA are expressed as follows:

a. The purchaser's price is the amount paid by the purchaser, excluding any deductible VAT or similar deductible tax, in order to take delivery of a unit of a good or service at the time and place required by the purchaser. The purchaser's price of a good includes any transport charges paid separately by the purchaser to take delivery at the required time and place;

b. The producer's price is the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any VAT, or similar deductible tax, invoiced to the purchaser. It excludes any transport charges invoiced separately by the producer; and

c. The basic price is the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any tax payable, and plus any subsidy receivable, on that unit as a consequence of its production or sale. It excludes any transport charges invoiced separately by the producer.

15.52 When an item is not sold directly by the producer but passes through the hands of one or more wholesalers or retailers, it is necessary to consider the distribution margins these wholesalers and retailers add to the cost of the product. One possibility is to treat distribution margins as another element increasing the value of the purchaser's price over the producer's price. An alternative possibility is to treat the purchaser as undertaking two quite different transactions; one is the purchase of the item directly from the producer, the second is the purchase of the margins involved. A supply and use table at purchasers' prices assumes the former; a supply and use table at basic prices assumes the latter.

15.53 Whichever alternative for handling distribution margins is chosen, the three price valuations can be linked schematically as follows:

Purchasers' prices

minus wholesale and retail distribution margins (distribution margins)

minus transportation charges invoiced separately (transport margins)

minus non-deductible VAT

equals producers' prices,

minus taxes on products resulting from production excluding invoiced VAT

plus subsidies on products resulting from production

equals basic prices.

15.54 Thus the three factors that need to be considered in converting the values of output and imports to purchasers' prices are:

a. Distribution margins;

b. Transport margins, including the CIF/FOB adjustment;

c. Taxes less subsidies on products.

Each of these is considered in turn below. Distribution margins are typically more significant in size than transport margins but are conceptually more straightforward. Transport margins are complex because of the different ways in which the cost of transport can be recovered.

Distribution margins

15.55 Distribution margins may be significant and may apply to virtually all goods. When a supply and use table is compiled at purchasers' prices, the distribution margins need to be added to the rows for each group of products.

15.56 In order to account for the use of wholesalers and retailers margins, an adjustment column is added to the supply part of the supply and use tables. This column shows the addition to the value of each group of goods to which the margins apply with an offsetting negative entry for the rows corresponding to the margins. Typical entries for transport margins are treated in the same manner. Table 15.2 shows the adjustment column (2) from the full supply table 15.12.

15.57 Distribution margins are usually produced within the economy but may apply to both domestic production and to imports. Transport margins, on the other hand, may be provided by both residents and non-residents and may be provided to both residents and non-residents. This aspect of transport margins is discussed in the following paragraphs.

Table 15.2: An example of the entries to adjust supply to include distribution margins and transport margins

	Trade and transport margins
Agriculture, forestry and fishery products (0)	2
Ores and minerals; electricity, gas and water (1)	2
Manufacturing and other industrial products (2-4)	74
Constructions and construction services (5)	0
Trade, accommodation, food and beverage servicing services; transport services (6)	-78
Financial and related services (7 less 72-73)	0
Real estate services; and rental and leasing services (72-73)	0
Business and production services (8)	0
Education, human health and social care services (92-93)	0
Other services (94-99)	0
Public administration and related services (91)	0
Total	**0**

Transport margins

15.58 It is helpful to consider the case of domestic transport charges first and see how they are included in the supply and use tables before turning to transport margins on imports.

Domestic transport charges

15.59 As explained in paragraphs 7.73 to 7.74 if the producer agrees to deliver the product to the purchaser without explicit charge, the cost of delivery is included in the basic price. Only if the purchaser is explicitly invoiced for the delivery is there a specific transportation margin that is part of the purchaser's price.

15.60 The rationale behind the need for different recordings is that the point when change of ownership occurs is different under the different scenarios. If A agrees or is obliged to provide transport to B, even for a charge,

then change of ownership takes place when the product is delivered to B's factory and therefore a transport margin is recorded, if the basic price does not include the cost of delivery. If B agrees or is obliged to arrange delivery itself, then change of ownership takes place when the product leaves A's factory.

15.61 Consider the situation where a unit, A, sells a product to unit B. For simplicity it is assumed they are both producers with factories some distance apart. If B collects the product from A, the price charged is 200. The cost of transport from A's factory to that of B is 10. Both A and B have delivery fleets that can transfer the product from A to B or may use a third party, C, to make the transfer. Ten per cent tax (not VAT) is payable on both the cost of the product and the transport costs. Different values of the three possible prices result from the alternative means of moving the product from A to B as shown in table 15.3.

Table 15.3: Example of the impact on prices of transport charges

Delivery method	Basic price	Tax	Producers' price	Transport margin plus tax on transport	Purchaser's price	Comment
A charges B an all-inclusive price and uses own delivery fleet	210	21	231		231	Transport is an ancillary activity of A
A charges B for delivery but uses own delivery fleet	200	20	220	11	231	Transport is a secondary activity of A
A charges B an all-inclusive price but uses C to deliver	210	21	231		231	C's production is intermediate consumption of A
A charges B for delivery but uses C to deliver	210	21	231		231	C's production is intermediate consumption of A
B collects the product from A using own delivery fleet	200	20	220		220	Transport is an ancillary activity of B
B uses C to collect product from A and deliver to B	200	20	220		220	B buys 2 products; one from A for 220 and one from C for 11
	10	1	11		11	

15.62 The entries in the use table will be quite different for each of these six cases, even though the total cost to B is similar throughout. Only when B collects the product itself is the purchaser's price for the product plus delivery less than 231. In this case it must be assumed that the internal costs of collection are 10, as before, so only the tax payable on this, 1, is a reduction in the total cost of taking delivery of A's product even though the purchaser's price is 220 compared with 231 for other modes of delivery.

15.63 When A or B undertake transport as an ancillary activity, the cost of petrol and other consumables will appear in intermediate consumption, the driver's wages in remuneration of employees and there will be consumption of fixed capital recorded in respect of the vehicle used.

15.64 These entries will appear for A when it is undertaking a secondary activity but the cost of the secondary activity will appear as intermediate consumption of A's primary activity.

15.65 When C acts as an agent for A, whether A charges B directly for C's services or not, the cost of C's services forms part of A's intermediate consumption. When C is hired directly by B, then the service cost is part of B's intermediate consumption.

International transport charges

15.66 The information for allocating domestic transport charges is typically available to national accountants from survey information collected from domestic establishments. In the example above, information from A, B and C would, in principle, be available. For products delivered to establishments abroad, this is not the case. Either A or B is non-resident and possibly C also. The most common situation is where information coming from the administrative records compiled by customs authorities must be used. Increasingly, however, some

products circulate without direct customs supervision and recording. This applies to services but services seldom if ever have transportation charges associated with their delivery.

15.67 The following are examples of goods that may not be covered in customs statistics:

a. Goods circulating within a single customs area that spans several economies;

b. Goods delivered to offshore establishments such as oil platforms;

c. Certain types of goods, such as diamonds and other precious goods of high value but small volume, that may be carried by persons; and

d. Ships and aircraft, which, while hardly concealable in a physical sense, may be difficult to distinguish from the vehicles that belong to another economy and simply transit through the domestic economy.

It is therefore appropriate to consider products subject to customs documentation separately from other internationally traded products. Separate consideration also must be given to transport related to merchanted goods and goods sent abroad for processing.

Valuation of imports and exports – the CIF/FOB adjustment

15.68 In the integrated framework of the SNA, imports and exports of goods refer to transactions that occur when there are changes in economic ownership of goods between residents and non-residents, whether or not there are corresponding physical movements of goods across borders. However, some differences exist between the concepts used in international trade statistics and the integrated framework of the SNA and *BPM*, and adjustments therefore need to be made to the international trade statistics in order that they can be used in the supply and use tables. Total imports and exports of goods are valued free on board (FOB), that is, at the exporter's customs border, in the integrated framework of the SNA. As it may not be possible to obtain FOB values for detailed product breakdowns, the tables containing details on international trade show imports of goods valued at the importer's customs border (CIF), that is, cost, insurance and freight, supplemented with aggregate adjustments to FOB values. CIF values include the insurance and freight charges incurred between the border of the exporter and that of the importer. The value on the commercial invoice may of course differ from both of these values.

15.69 The CIF/FOB adjustment in the supply and use tables has both the role of balancing detailed service flows on different valuations in the detailed supply and use tables and the role as a macro adjustment to total imports of goods and services. In brief terms:

- At the detailed product level, the supply and use of the individual services (freight transport and insurance) are adjusted so that they can be meaningfully balanced under the CIF valuation of goods; and
- At the macro level, the adjustment entries (the sum of which must be zero) that will make the separate totals for exports and imports of goods and of services equal to what is shown in the accounts for the rest of the world, where a FOB valuation of imports of goods is applied.

15.70 The CIF/FOB adjustment made to the services account for, on the one hand, the difference implied by the two valuations (FOB and CIF) of services imports where a non-resident has supplied the services (this adjustment is negative), and on the other hand, the difference implied by the two valuations of services exports where the service is supplied by a resident producer. In the supply and use tables, the latter adjustment is shown as a negative import with the result that the difference between the imports of goods on a FOB basis and the imports of goods on a CIF basis is offset with an adjustment to imports of services, also in the supply table.

15.71 In table 15.4, the total CIF-based imports are obtained as the sum of data in columns 1 and 4, whereas the FOB-based imports are obtained as the sum of data in columns 1 and 2. This implies that in the measures of the total imports according to the alternative valuations the CIF/FOB correction item will not appear.

15.72 Note that in the CIF to FOB adjustment in the balance of payments, the value of insurance premiums (incurred between the two frontiers) is deducted from the value of goods, whereas the corresponding adjustment in the balance of payments services account is to insurance services. As a result, there would generally be a

difference between the total adjustment to goods and the corresponding adjustment to services. This difference is not very significant in the context of the balancing that is done in compiling the supply and use tables.

Table 15.4: An example of imports entries in the supply table with the global CIF-to-FOB adjustment

	Imports of goods	Imports of services			Total imports
Product groups	CIF based *detailed* goods	FOB based *detailed* services (BOP data)	Adjustment of services to SUTs basis	CIF based *detailed* services (SUTs basis)	
	1	2	3	4	5
1 Agriculture	37				37
2 Mining, etc.	61				61
3 Manufacturing	284				284
4 Construction					
5 Trade etc.		62	-6	56	56
6 Finance and insurance		17	-4	13	13
7 Real estate, etc.					
8 Business, etc.		5		5	5
9 Community, etc.					
10 Other services					
11 Public administration					
Total, CIF-based	**382**	84	-10	**74**	**456** (=1+4)
CIF/FOB adjustment	**-10**			**+10**	0
Total, FOB-based	**372**	**84**		84	**456** (=1+2)
Purchases abroad by residents	20	23		23	43
Total	392	107		107	499

Products not included in customs documentation

15.73 In the absence of customs documentation, information must be obtained from surveys and other sources and will typically record the prices at which transactions are actually undertaken. The analysis above for goods transported within the domestic economy is likely to apply to international transport also. When the supplier (exporter) commits to deliver goods to the importer, the value of the goods will include the transport costs. When the purchaser (importer) is responsible for transport, the value of the goods excludes the transport costs and these feature as a separate purchase. Whichever of the units takes responsibility for the transport, the values of the goods for both the exporter and importer are identical. This is an important distinction from the valuation used in customs merchandise trade statistics as discussed in the immediately following section.

15.74 Following the example in the previous section, if A and B are resident in different economies, whenever A takes responsibility for delivery to B, the value of exports from A (and the corresponding value of imports to B) includes the transport element. If B takes responsibility for the transport from A, then neither the value of exports from A nor the value of imports into B includes the value of the transport.

15.75 If the third party, C, is used to undertake the transport, the residence of C is important in determining the value of total imports and exports. If C is co-resident with A and provides services to A, this is a domestic transaction within A's economy. However, the value of the exports of goods from A will reflect the fact that they must cover the cost of services bought from C. If C is co-resident with A but provides services to B to transport the goods from A to B, then C also provides exports to B but these are shown as exports of transport services, not of goods.

15.76 If C is co-resident with B and contracts with A to transport goods to B, there are imports of transport services from B's economy to A's which are then included in the value of exports from A to B. If C contracts with B to transport the goods, this is a domestic transaction for B's economy even though C is operating in foreign territory in collecting and moving the goods.

15.77 If C is resident in an economy other than that of A and B, then the services provided to A constitute exports of services from C's economy to A's and the value of the goods exported from A to B are sufficient to cover this cost of imports just as previously they covered the cost of a domestic transaction. If C contracts with B to move the goods, the cost shows as an export of services from C's economy to B's.

15.78 As in the domestic case, the question of whether the value of goods covers the cost of transportation or not depends on whether the exporter or importer is responsible for transport. Again this is equivalent to whether change of ownership takes place after or before transportation from A to B.

Products covered by customs documentation

15.79 In most countries, most information on imports and exports of goods will come from customs declarations. These declarations are compiled for administrative purposes, namely the levy of import and export duties, and are therefore not necessarily ideal for use in the national accounts or balance of payments context but are used because of their general availability and consistency of valuation.

15.80 Within customs declarations, imports are usually valued CIF (that is, they include cost, insurance and freight) at the point of entry into the importing economy. This valuation is standard, regardless of whether any of the CIF elements are provided by domestic enterprises because import duties are typically imposed on the CIF valuation. It also excludes the cost of transport from the border of the importing economy to the premises of the importer. This transport also may be provided by either a resident or non-resident carrier. Exports are valued FOB (free on board) at the point of exit from the exporter's economy. It includes the cost of transport from the exporter's premises to the border of the exporting economy. The CIF/FOB valuation principles arise from the common situation where goods are transported by ship from one country to another and it is not unreasonable to assume that transport to and from the ship would be undertaken by carriers resident in the relevant economy. This assumption may still hold in the main for goods transported by sea and air. It is much less satisfactory for goods transported overland where a single vehicle may transport goods from the exporter to importer without a break at national borders.

15.81 As noted already, if it is the exporter that contracts the delivery (whatever the nationality of the carrier), it is correct that the cost of transport is included in the value of the good imported, though describing this as CIF is not helpful in the context of the integrated framework of the SNA since it is a legitimate part of the cost of the imported good and should not be seen as a separate import of transport services. The delivery contractor provides services to the exporter and these are shown as an import of services to the exporting economy if the contractor is not co-resident with the exporter.

15.82 If it is the importer that contracts the delivery and if the carrier is not co-resident with the importer, an import of services takes place and, ideally, for the integrated framework of the SNA it would be desirable to separate the CIF value into the value of the good only and the value of the transport service. If the importer undertakes delivery itself or contracts with a unit resident in the same economy, there is in fact no import of services as described in paragraphs 15.68 to 15.78.

15.83 In respect of the above, it should be noted that for the 2025 SNA and *BPM7* the FOB valuation for exports and imports has been maintained. However, it is generally acknowledged that the observed exchange values, which are closely aligned to invoice values, are conceptually preferred. Subject to further testing of the implementation in practice, it is intended to be introduced as the basic principle for valuing imports and exports in the future.

Transport on merchanted goods

15.84 Merchanting is a process whereby a unit in economy X purchases goods from economy Y for sale in economy Z. The goods legally change ownership but do not physically enter the economy where the owner is resident. By convention, the acquisition of the goods intended for resale is shown as negative exports. When the goods are sold, they are shown as (positive) exports. When acquisition and sale take place in the same period, the difference shows as an addition to exports. If only the acquisition takes place in an accounting period, the negative export is offset by an increase in inventories of goods for resale, even though those goods are held abroad. In a subsequent period when the goods are sold, the exports recorded for their sale are offset by a withdrawal from inventories. As normal, the withdrawals should be valued at the cost of the goods at the date of the withdrawal, any increase in value due to a change in the price of the goods being shown as a holding gain or loss.

15.85 The services provided to transport the goods from Y to Z may be paid for by any of the units in X, Y or Z and should be recorded consistently with the principles outlined above. (See chapter 23 on Globalisation and 33 on Transactions and positions between residents and non-residents for more details on merchanting and inverse merchanting.)

Transport on goods sent abroad for processing

15.86 Goods sent abroad from economy X to economy Y for processing without changing ownership, after which they are returned to economy X, are not shown as either exports of goods from X to Y or subsequently as exports of goods from Y to X. As explained above, only the agreed processing fee is shown as an export of service from Y to X. However, there are costs of transporting the goods on both the journey from X to Y and then on the return journey from Y to X. The costs of these journeys, excluding the value of the goods themselves, must be shown as transportation services. If X is responsible for transport on either the outward or inward journey, the cost is an import to X's economy unless it is carried out by X or another unit co-resident with X. If Y is responsible for the transport, the cost is an import to Y unless it is carried out by Y or another unit co-resident with Y. When Y is responsible for transport costs (on either or both journeys) the costs will be covered by the agreed processing fee and hence in the value of the exports of services from Y to X.

Recording transport margins in the supply and use tables

15.87 In the supply and use tables, either supply must be adjusted to be at purchasers' prices or use must be adjusted to be at basic prices since both sides of the balance must be expressed in the same prices. It is common to compile the use table, initially at least, in purchasers' prices. As shown in table 15.3, this value will often be the same however the good is transported from the seller to the buyer. The only exception is when the buyer fetches the goods using its own resources. The way the transport service shows in the use table, however, depends critically on how the service is provided (using own resources or a third party contractor) and to whom (the buyer or seller). The different forms of recording in different circumstances are indicated in table 15.3.

15.88 Imports of goods are to be recorded in the supply table at basic prices with taxes and margins added subsequently. There is no universally appropriate valuation for imports of goods at basic prices. The following recommendations should be noted.

a. If the data come from other than customs documentation, it is to be assumed that actual transaction prices are used and it should be clear whether transport services are separately invoiced or not. If

they are, the basic price excludes the value of transport; if not, the basic price value of goods includes transport costs. The purchaser's price will differ from the basic price only because of any taxes payable by the purchaser.

b. If the data come from customs documentation and if it is the exporter of the goods who is responsible for meeting the transportation costs, the value of the goods at basic prices should include the transport costs. In this case a CIF valuation will approximate the basic price (approximate unless a domestic carrier assumes responsibility for transport from the border of the importing country). The purchaser's price will differ from the basic price only because of any taxes and subsidies payable by the purchaser.

c. If the data come from customs documentation and if it is the importer of the goods who is responsible for meeting the transportation costs, the value of the goods at basic prices should exclude the transport costs. In this case an FOB valuation will approximate the basic price (approximate because the value of transport from the place of origin to the border of the exporting economy is included in the FOB valuation). The purchaser's price will differ from the basic price because of the transport costs incurred plus any taxes and subsidies payable by the purchaser.

d. It may not be possible to determine from customs declarations which unit is responsible for the transport costs and, even when it is and conceptually the transport costs should be separated from the value of the goods themselves, there may be no information and no resources available to make the separation in practice. In such a case the CIF value of imports may be the only source with a disaggregation by type of good. If the disaggregated CIF figures are used for imports of goods, though, that part of the transport costs and insurance also included in imports of services would be double-counted. In order to avoid this, therefore, an adjustment column is inserted into the supply table. The adjustment column consists of a deduction from the services items for transport and insurance equal to the CIF-to-FOB adjustment for these items with an offsetting global adjustment made to imports of goods. Table 15.4 gives an example of such an adjustment.

Taxes and subsidies on products

15.89 The taxes and subsidies on products that add to the value of products available in the economy are exactly those described as taxes and subsidies on products in chapter 8 on Earned income accounts. Other taxes on production are included in the basic price measurement of output and other subsidies on production are excluded so do not feature in the adjustment for taxes that intervenes between a valuation at basic prices and purchasers' prices.

15.90 Value added type taxes in the integrated framework of the SNA include VAT proper and taxes that are deductible in a way similar to VAT. The SNA recommends that output, even at producers' prices, is valued excluding VAT invoiced by the producer; imports also are valued excluding invoiced VAT. For intermediate and final uses, the purchases of goods and services are recorded including non-deductible VAT only.

15.91 The general cases in which VAT is usually deductible, non-deductible or just not applicable are as follows:

Deductible VAT:

- Most of intermediate consumption
- Most of gross fixed capital formation
- Part of changes in inventories.

Non-deductible VAT:

- Most of final consumption expenditure
- Part of gross fixed capital formation
- Part of changes in inventories
- Part of intermediate consumption.

VAT not applicable:

- Exports
- Any goods or services subject to a zero rate of VAT regardless of their use
- Any producers exempted from VAT registration (small businesses or the like).

15.92 When output is at basic prices, the taxes column contains total non-deductible VAT on products, taxes and duties on imports excluding VAT, export taxes and taxes on products excluding VAT, import and export taxes. When output is at producers' prices, the taxes column includes only taxes and duties on imports (excluding VAT), plus total non-deductible VAT on those products.

15.93 Subsidies are recorded as if they were negative taxes on products or negative taxes on production. Only subsidies on products (if any) are entered into the column for the tax adjustment to the valuation of supply; they appear with a negative sign to indicate they reduce the value of purchasers' prices rather than increase it.

15.94 Table 15.5 shows columns 3 and 4 from the full supply table in table 15.12 that show the adjustments for taxes and subsidies on products.

Table 15.5: An example of the entries to adjust supply to include taxes less subsidies on products

	Taxes on products	Subsidies on products
Agriculture, forestry and fishery products (0)	5	-3
Ores and minerals; electricity, gas and water (1)	5	0
Manufacturing and other indusrtial products (2-4)	94	-5
Constructions and construction services (5)	17	0
Trade, accommodation, food and beverage servicing services; transport services (6)	5	0
Financial and related services (7 less 72-73)	0	0
Real estate services; and rental and leasing services (72-73)	0	0
Business and production services (8)	11	0
Education, human health and social care services (92-93)	0	0
Other services (94-99)	4	0
Public administration and related services (91)	0	0
Total	**141**	**-8**

D. The use table

15.95 A use table can be viewed as a rectangular table with four quadrants, two in the upper part and two in the lower part. The upper left quadrant consists of a sub-table showing the use of different products by different groups of producing units. In other words, this quadrant contains intermediate consumption, disaggregated by product in the rows and by industries in the columns. The upper right quadrant consists of a sub-table showing the use of different products by final consumers, a sub-table for exports and a sub-table showing the use of different products for capital formation. Together these three sub-tables show the final uses. The lower left quadrant contains information on value added disaggregated to show the elements of the generation of income account, that is remuneration of employees, gross operating surplus or gross mixed income and other taxes less subsidies on production. Each of these five sub-tables is described below. The lower right quadrant is empty.

15.96 The upper part of the use table (the intermediate and final use quadrants) can be valued at purchasers' prices or at basic prices. In this section sub-matrices at purchasers' prices are discussed. The alternative valuation at basic prices is discussed in section E along with considerations about expressing the use table in volume terms.

15.97 Together the left-most quadrants (the intermediate consumption and value added quadrants) can be viewed as a set of columns, each relating to a group of producing units, containing information relating to the production and generation of income accounts plus other information that can be attributed to groups of producing units at a more disaggregated level than groups of enterprises. This other information most often includes capital formation and the number of employees for each group of producing units. These aspects are also discussed in section E.

1. The use of products by producing units

15.98 The sub-table showing the use of specific products by each type of producing unit (the upper left quadrant of the table) has long been considered one of the more interesting aspects of supply and use tables and input-output tables. It gives a picture of how products are converted to more complex products either for yet further processing or for sale to final users or as exports. Unlike the supply table, which also shows products by producing units, the sub-table of the use table (sometimes called the "absorption matrix") is densely rather than sparsely populated. The patterns of inputs for market, own final use and non-market producers of the same products are likely to bear a strong resemblance to one another but the variations give insights into how the characteristics of the three sorts of production vary.

15.99 The definition of intermediate consumption and the borderlines with payments for the use of labour and capital are exactly as explained in chapter 7 on Production account.

15.100 Compiling the sub-table usually starts from information provided by establishments about their intermediate consumption. These may be classified according to the purpose they serve rather than the type of good. The classification of outlays of producers by purpose (*COPP*) consists of six main headings that apply to intermediate consumption of establishments, only one of which relates to current production techniques. The other five cover more general categories such as outlays on marketing and human resource development that are common to most establishments. Use of this detail is discussed in chapter 38 on Thematic and extended accounts.

15.101 When this is all the information available to the compiler, they must make a judgement of what type of products will be covered in each heading allowing for variations between producing units of different types.

15.102 It is important to bear in mind the interpretation of data in this sub-table. The total across the rows show how much of a given product is used as intermediate consumption by all producing units. The total down a column shows the total of all types of products used as intermediate consumption inputs by a single type of producing unit. There is absolutely no reason the relative size of these two measures should be related in any systematic manner but mistaking one concept for the other is a common error made by users not very familiar with the nature of a supply and use table.

15.103 Table 15.6 shows columns 16, 20, 24 and 25 of the use table that include the intermediate consumption by each type of production. This contrasts with table 15.1 which shows the same columns for the supply part of table 15.12. Whereas table 15.1 shows that most manufactured products are produced by the market producers in the manufacturing industry, table 15.6 shows that all three types of producers use manufactured products and that only about half of manufactured products are used in manufacturing industries. While the proportion quoted depends on this example, the phenomenon is generally observed.

Table 15.6: Abbreviated version of the intermediate consumption part of the use table

	Market production	Production for own final use	Non-market production	Total
Agriculture, forestry and fishery products (0)	82	1	5	88
Ores and minerals; electricity, gas and water (1)	208	0	9	217
Manufacturing and other industrial products (2-4)	878	32	80	990
Constructions and construction services (5)	22	0	18	40
Trade, accommodation, food and beverage servicing services; transport services (6)	110	0	9	119
Financial and related services (7 less 72-73)	76	5	21	102
Real estate services; and rental and leasing services (72-73)	39	0	18	57
Business and production services (8)	171	12	39	222
Education, human health and social care services (92-93)	2	0	32	34
Other services (94-99)	6	0	4	10
Public administration and related services (91)	0	0	2	2
Total	**1 594**	**50**	**237**	**1 881**

2. The use of products for final consumption

15.104 As explained in chapter 10 on Use of income accounts, there are four types of units that undertake final consumption expenditure: households, NPISHs, general government and the central bank. The manner of compiling the sub-table of the use table showing the use of products for final consumption is similar for each of the four types of consumer but starts from a different classification for each of them.

15.105 Information on consumption by households usually starts from household surveys. In these, household expenditures are classified according to the classification of individual consumption by purpose (*COICOP*). *COICOP* classifies household expenditure into 13 main categories, such as food, clothing and housing. This is useful for analysis of how much of household consumption goes on essentials, for instance, and is basic to the establishment of weights for the consumer price index but it is not in the necessary format for inclusion in the use table. For that a conversion table is necessary showing which of the designated products are purchased as food, which as clothing and so on. It should be noted that household surveys typically include expenditure by households abroad, for example on holidays, which must be separated from demand in the domestic economy in the supply and use tables.

15.106 A similar approach is used for consumption expenditure by NPISHs but starting from the classification of the purposes of non-profit institutions serving households (*COPNI*). *COPNI* spells out the different sorts of NPISHs there may be by their objectives, for example, whether they undertake research and scientific services, education services or are religious associations. Given this knowledge, it should be possible to determine whether the NPISH is one with costs mainly limited to those associated with running an office with few paid employees or whether there are significant costs associated with acquiring goods and services to pass on to households, for instance.

15.107 For general government consumption expenditure, the starting classification is the classification of functions of government (*COFOG*). This classification is consistent with that proposed in the *GFSM 2014* and shows a breakdown of government expenditure by standard functions associated with general public services, defence, law and order and so on. As with the classification for NPISHs, knowing the type of function gives a way to start to allocate the expenditure between intermediate consumption and other expenditure and to allocate intermediate consumption to specific product types.

15.108 It may be useful if possible to split the columns for general government (and NPISHs if appropriate) to show individual consumption expenditure and collective consumption expenditure separately in order to calculate actual consumption rather than consumption expenditure as explained in chapter 10 on Use of income accounts. The whole of non-market output by the central bank is considered as collective consumption expenditure.

15.109 When these entries are compiled at purchasers' prices, as assumed in this section, there are no entries for consumption of wholesale and retail services as these are included with the expenditure on the products to which they apply. Equally, taxes payable on products are included in the purchaser's value and do not show separately. (These statements apply equally to products used for intermediate consumption and for capital formation but are much more significant for final consumption.)

15.110 Table 15.7 illustrates the part of the use table for final consumption (columns 31, 32, 33, 34 and 30 of table 15.12). The entry for production for own final use by households includes the estimate for owner-occupied housing services. The item for expenditure on non-market production by households represents the partial payments made by households for items supplied at nominal prices by government and NPISHs

Table 15.7: The final consumption part of a use table

	Households	NPISHs	Central bank	General government	Total
Agriculture, forestry and fishery products (0)	28	0	0	2	30
Ores and minerals; electricity, gas and water (1)	40	0	0	0	40
Manufacturing and other industrial products (2-4)	570	0	0	3	573
Constructions and construction services (5)	2	0	0	0	2
Trade, accommodation, food and beverage servicing services; transport services (6)	42	0	0	0	42
Financial and related services (7 less 72-73)	53	0	2	0	55
Real estate services; and rental and leasing services (72-73)	115	0	0	0	115
Business and production services (8)	40	0	0	0	40
Education, human health and social care services (92-93)	21	33	0	188	242
Other services (94-99)	85	0	0	0	85
Public administration and related services (91)	5	2	0	169	176
Purchases abroad by residents	43	0	0	0	43
Domestic purchases by non-residents	- 29	0	0	0	- 29
Total	**1 015**	**35**	**2**	**362**	**1 414**

3. The use of products for gross capital formation

15.111 There are different types of gross capital formation to be examined: gross fixed capital formation, changes in inventories and valuables. The discussion in the following sections considers acquisitions less disposals of produced assets (excluding produced natural resources), acquisitions less disposals of produced natural resources, changes in inventories (to be distinguished between those related to natural resources and other changes in inventories), and acquisition less disposal of valuables. In the discussion below, the acquisitions less disposals of produced assets have been combined; also changes in inventories are treated as a whole.

Gross fixed capital formation

15.112 Allocating gross fixed capital formation to products is the easiest part of the use table since the categories of fixed capital fall quite naturally into product groups. Further, they will often be exempt from taxes on products and not subject to distribution margins. However, some assets are subject to costs of ownership transfer on acquisition and disposal and these costs need to be allocated to the appropriate product. This product may be distribution or transport but may also be legal services or real estate services, for example, depending on the asset concerned.

15.113 There is a need to recognise the change in the use of assets. For example, when a household purchases a car, this is recorded as household final consumption expenditure. However, if a household starts to use their car to provide transportation or taxi services to third parties, the car is (partly) being used to facilitate the production of services and there should be the recognition of an asset in the balance sheets in the national accounts. This is recorded as reduction in household final consumption and an increase in household gross

fixed capital formation. If the asset is used partly for the households final consumption and partly for production purposes, the value of the asset recorded in the balance sheet should reflect the share of the asset's use in the production of services.

15.114 One other aspect that does need to be mentioned, though, is the treatment of existing goods that are resold to another unit. (This applies to final consumption expenditure also but is described here because it is most common for gross fixed capital formation.)

Resale of existing goods

15.115 Strictly speaking, it is not exactly true that all goods available for purchase in the domestic market come from domestic production or imports. Some goods may exist in the economy already and simply change owners. The most obvious example is fixed capital, where buildings and vehicles are regularly sold before their useful life is exhausted. In this case, the supply of goods is recorded not as a positive entry in the supply table but as a negative entry in the use table.

15.116 When a building is sold, for example, the seller records negative fixed capital formation and the purchaser records positive fixed capital formation. These items frequently do not offset one another exactly as there may be costs of ownership transfer associated with the exchange. As explained in chapter 11 on Capital account, costs of ownership transfer incurred by the seller should be written off during the period the seller has owned the asset, so that by the time the item is sold, all the costs of ownership transfer on acquisition should have been written off. For the purchaser, costs of ownership transfer on acquisition of the asset are recorded as part of gross fixed capital formation and, in turn, are written off over the period the purchaser expects to use the asset. In this way costs of ownership transfer of both disposal and acquisition are treated as new fixed capital formation.

15.117 Fixed assets may not always be sold to other producers in the same economy. For example, it is common for aircraft to be sold abroad. In this case, the supply of the aircraft is still recorded as negative capital formation but the use is recorded as an export.

15.118 Even when an asset is no longer cost effective, it may have a residual value, for example as scrap. (It should be noted, though, that the margins charged by scrap merchants are often very high compared to the prices paid by them to acquire the scrap.) In that case the supply is recorded as negative capital formation and the use as intermediate consumption of a producing unit processing the scrap. Chapter 11 on Capital account also explains why the total depreciation over the life of the asset is not necessarily the whole value of the asset on acquisition but the difference between the value of the asset on acquisition and its value on final disposal, in this case the scrap value. In cases where the scrap value does not coincide with the residual balance sheet value of the asset immediately before disposal, an adjustment is to be made to the value of the asset via the other changes in the volume of assets and liabilities account.

15.119 Second-hand assets may also become household consumption expenditure, as for example when a hire car company sells its cars to households for recreational purposes.

15.120 If a unit disposes of more assets than it acquires in a period, it will have negative capital formation. It is possible, though not very common, for the figure of capital formation for a group of producing units also to be negative in such a case.

15.121 As explained in chapter 10 on Use of income accounts, it is assumed that a household consumes products at the moment they are acquired. In the case of consumer durables this is not strictly so and consumer durables may be sold or donated to other units at a later time (for example in response to requests for disaster relief). In this case also, the supply of the goods in question is treated as negative expenditure by the previous owner and positive use by the new owner (including households in the rest of the world). The way in which the income element of donations to other units is handled is via transfers, as explained in chapter 9 on Transfer income accounts, but for a supply and use table this aspect is not relevant since it is only the physical disposition of the product that is recorded.

Changes in inventories

15.122 While allocating fixed capital formation to product type is relatively straightforward, allocating changes in inventories to product type is challenging. Chapter 11 on Capital account explains how the types of inventories identified in the integrated framework of the SNA are materials and supplies, work-in-progress, finished goods, and goods for resale. Work-in-progress and finished goods are straightforward to allocate since the products concerned must be those that the unit reporting the inventories produces. Materials and supplies are more complex. Some will be specific to the producing unit reporting them but virtually all producing units will hold some office supplies and cleaning materials, for example, though maybe not to a significant degree. For goods for resale, however, practically all types of goods may be included in inventories. Not only is the range of goods extensive, the pattern of goods held for resale is subject to a high degree of variation over time and even within an accounting period.

15.123 In the exercise of balancing a supply and use table, this uncertainty over the composition of inventories, added to the fact that even the valuation of changes in inventories may be less robust than desired, means that inventories are often estimated indirectly and with the need to balance the supply and use table as one of the operating constraints.

Valuables

15.124 The range of products held as valuables is quite extensive and it is an area where existing products may feature. For example, antiques and old masters, by their very nature, are not output of the current period. The importance of the value of acquisition less disposals of valuables as an item of capital formation, though, tends to be limited and any major disposal, such as sales by a museum, are likely to be well known.

15.125 Table 15.8 illustrates the capital formation part of a use table.

Table 15.8: The capital formation part of a use table

	Gross fixed capital formation	Changes in inventories	Acquisition less disposals of valuables	Total
Agriculture, forestry and fishery products (0)	2	1	0	3
Ores and minerals; electricity, gas and water (1)	0	-1	0	-1
Manufacturing and other industrial products (2-4)	161	5	10	176
Constructions and construction services (5)	190	23	0	213
Trade, accommodation, food and beverage servicing services; transport services (6)	0	0	0	0
Financial and related services (7 less 72-73)	0	0	0	0
Real estate services; and rental and leasing services (72-73)	22	0	0	22
Business and production services (8)	1	0	0	1
Education, human health and social care services (92-93)	0	0	0	0
Other services (94-99)	0	0	0	0
Public administration and related services (91)	0	0	0	0
Total	**376**	**28**	**10**	**414**

4. Exports

15.126 The allocation of exports by product requires the same conversion between *SITC* or *HS* or *EBOPS* codes as the allocation of imports does. The valuation of exports is easier, though, since in trade statistics exports are uniformly valued FOB. This valuation may not be in perfect accord with the recording in the integrated framework of the SNA since the point of valuation is at the border, not necessarily where change of ownership takes place. As with the valuation of imports, ideally exports should be valued when and where they change

ownership from a resident unit to a non-resident unit but, again as with imports, the assumption that this change of ownership takes place at the national border may be the only practical assumption given existing data sources.

15.127 The different components of package tours are recorded separately, i.e., the package is unbundled. Statistical producers need to distinguish the residency of the visitor, the end provider of the tourism service, the travel agency, the tour operator itself and if relevant, the use of a digital intermediate platform. For package tours, a distinction should be made for at least three major groups of services:

- the services themselves, for example, transport, food, accommodation;
- the services provided by the tour operator; and
- the margin of the travel agency which is usually different from margin earned by the tour operator selling the tour.

15.128 The impact of recording the unbundling package tours should be consistently applied in estimating domestic output by product using *CPC* and imports of services (travel account of the balance of payments) by product in the supply table, and again by product, entries for intermediate consumption, household final consumption expenditure and exports of services (travel account of the balance of payments) in the use table. More details are available in *BPM7*.

15.129 For exports of goods, note the possible change regarding valuation (i.e., from FOB to invoice values) in the future macroeconomic statistical standards as discussed in paragraph 15.83.

5. Introducing value added

15.130 The sum across the rows of the use table, encompassing intermediate consumption, final consumption, capital formation and exports, for each product type must be equal to the sum across the rows of the supply table (domestic production plus imports plus valuation adjustments to make the valuation in the supply table consistent with that in the use table) for the same product type. The sum down each column of the supply table shows the value of output for the relevant type of producing unit. The sum down the column of the use table for the same type of producing unit shows the amount of intermediate consumption of that type of producing unit. It is an obvious extension, therefore, to add two further lines to the use table for the column corresponding to producing units. The second of these contains the values of output from the supply table, the first contains the difference between this total and the value of intermediate consumption just described and so represents value added for that type of producing unit.

15.131 Introducing the entries for value added and output is key to one of the main purposes of the supply and use tables, that of using the structure to ensure the accounts are internally consistent. Returning to some of the examples quoted in the introductory section illustrates this point.

15.132 Suppose the data from a household survey for cigarette consumption is assumed to be accurate and suppose for simplicity there are no exports of cigarettes. This figure then virtually determines the total use of tobacco products and subtracting imports of cigarettes gives a figure for the output of the domestic cigarette factories. This may be much lower than the amounts reported by the cigarette manufacturers and the compiler may be inclined to think the output of cigarette manufacturers is overstated. However, the main intermediate input to cigarette manufacture will be tobacco leaf and there will be other figures for either production or imports of tobacco. Given there are few uses for tobacco other than input into tobacco products and exports, if the supply and use table compiler wishes to adhere to the household expenditure survey data, he is faced with assuming either that there are errors of overstatement of cigarette manufacture, tobacco production or imports or the household figures for tobacco consumption are understated.

15.133 Consider another case of taxi services in a country where communal taxis are the main form of personal transport. As well as the value of taxi services reported by the taxi drivers, there may well be information about the number of cars and amount of petrol or diesel claimed as tax deductions because they are used for taxi services. A judgement can be made about whether these inputs are more consistent with the figure from the household expenditure survey than with the reported output figures.

15.134 More generally it should be noted that once the supply and use tables are balanced, any increase in final use

for a particular good must be met from increased total supply or decreased intermediate consumption for the same good. If the increased supply comes from domestic production, then value added increases in line with the increases in final use; if the increased supply comes from increased imports, then both value added and GDP are unaffected (or only marginally if there are import taxes on the good in question). Similarly, any increase in intermediate consumption without an increase in domestic output must lead to a decrease in final use and also a decrease in value added.

6. Expanding value added at basic prices

15.135 Useful as it is to add value added at basic prices to the bottom of the use table, it is possible and even more helpful to disaggregate value added and show all the entries in the generation of income account (described in chapter 8 on Earned income account). Table 15.9 shows the entries for each type of production in rows 14 to 24 of the use part of table 15.12.

Table 15.9: The value added part of a use table

	Market production	Production for own final use	Non-market production	Total
Intermediate consumption	1 594	50	237	1 881
Total gross value added/GDP	1 481	97	158	1 736
Remuneration of employees	1 039	0	111	1 150
Taxes less subsidies on production and imports	56	0	2	58
Mixed income, gross	46	15	0	61
Operating surplus, gross	340	82	45	467
Depreciation - gross mixed income	5	3	0	8
Deprecation - gross operating surplus	168	16	30	214
Depletion - gross mixed income	0	0	0	0
Depletion - gross operaitng surplus	30	0	0	30
Total output	**3 075**	**147**	**395**	**3 617**

15.136 The components of gross valued added for market producers shown in the supply and use tables are as follows:

Gross value added *equals*

remuneration of employees

plus other taxes, less subsidies, on production

plus gross operating surplus

plus gross mixed income

15.137 The relationship between gross value added and net value added by producer, by industry or by institutional unit is:

Gross value added

minus depreciation of fixed assets

minus depletion of non-produced natural resources

equals net value added

15.138 The relationship between gross operating surplus/gross mixed income with net operating surplus/net mixed income is:

Gross operating surplus/gross mixed income

minus depreciation of fixed assets

minus depletion of non-produced natural resources

equals net operating surplus/net mixed income

15.139 Gross value added by industry can be derived from the production approach and the income approach and balanced within the supply and use tables. Using the production approach, by industry, gross operating surplus (including gross mixed income) on a national accounts basis is estimated as a residual by deducting remuneration of employees and other taxes less subsidies on production from gross value added. Whereas, applying the income approach, by industry, using administrative and tax based data, gross operating surplus can be derived from income-based sources, in particular administrative data, as follows:

Gross operating surplus and gross mixed income *equals*

self-employment income (mixed income)

plus net trading profits of corporations (including quasi-corporations) before deductions for tax and extraordinary items but after deduction for depreciation

minus holding gains and losses on inventories

plus rent and rental income (both paid and imputed)

plus conceptual adjustments (e.g., implicit financial services on loans and deposits, insurance related transactions, own-account production, etc.)

plus depreciation of fixed assets

plus depletion of natural resources.

7. Adding other variables

15.140 As well as the entries for the generation of income account, it is possible to add supplementary items relating to other variables that are useful in a study of production at the establishment level. These are gross fixed capital formation by establishment and data on labour input. The labour market tables discussed in chapter 16 on Labour provide a framework for presenting more detailed data on labour input consistent with the use tables. These labour market tables include, for example, further breakdowns of labour input by, for example, sex or gender, level of educational attainment, etc., as well as provide links to variables such as jobs, vacancies and unemployment, which are highly relevant in analysing the labour market.

E. Further elaboration of the use table

1. Cross-classification by industry and institutional sectors

15.141 It is possible to take each column of the use table relating to production units and allocate all the entries to one of the institutional sectors of the economy but often the columns have to be allocated to more than one institutional sector. The column for *ISIC* class covering finance and insurance is mainly allocated to financial corporations but some units may cover unincorporated enterprises which are allocated to households. The columns for non-market output are allocated either to general government, NPISHs or the central bank. Other columns are mainly allocated to non-financial corporations but with those parts that represent unincorporated enterprises being allocated to households. A table showing such a cross-classification provides the link between the supply and use tables and the sequence of economic accounts since the totals by institutional sector correspond to the data in the production and generation of income accounts. Further discussion of this presentation and a numerical example is given in chapter 36 on Input-output tables.

2. A use table at basic prices

15.142 So far in this chapter, it has been assumed that both the supply and use tables have been expressed in purchasers' prices and this is done by adding to supply valuation terms that explain the differences between basic prices and purchasers' prices. It is also possible to bring the two tables to a common valuation basis by reducing the use table to basic prices, which is the subject of this section. One reason to undertake this more arduous task is to facilitate compiling a supply and use table in volume terms, as described below.

15.143 In looking at any element of the use table at purchasers' prices it is clear that it may be made up of as many as six components:

a. domestic production at basic prices;

b. imports;

c. distribution margins;

d. transport margins;

e. taxes on products; and

f. subsidies on products.

15.144 In order to reduce the use table at purchasers' prices to a domestic use table at basic prices, each element of the table must be decomposed into these six items. This can be seen as creating six similarly sized tables, each of which contains all the items for one of the components. This is much more resource intensive than bringing the supply table up to purchasers' prices where only six columns are needed, one for each of the six components.

Distribution margins

15.145 Margin services are an important kind of activity in the integrated framework of the SNA. Many goods pass from the producer to the purchaser by means of a wholesaler or retailer. Indeed, some goods may pass through the hands of several wholesalers on the way to the retailer. Many services, on the other hand, are supplied directly by the producer to the purchaser. This is by no means universal, though. Travel agents and offices offering tickets for sports and entertainment events are examples of a kind of "retailing" for services. In addition, many financial instruments are offered for sale (and are repurchased) with a spread between the buying and selling price. The most obvious example is perhaps foreign exchange. These spreads also represent a margin service supplied to the customer. In the case of services, though, the margin is treated as one of the products of the relevant service industries. In the case of goods, a separate type of activity, wholesale and retail services, covers the margins on all goods. Many of these are the output of wholesaler and retail traders but some are provided as secondary activity.

15.146 As long as the use table is shown at purchasers' prices, there is no separate use of the distribution margins provided by wholesalers and retailers. Table 15.2 shows that the additions to the values of various goods are exactly offset by negative entries for the supply of distribution margins so that in effect there is no remaining supply to be explained in the use table.

15.147 As explained in chapter 4 on Flows, stocks and accounting rules and chapter 7 on Production account, the activity of wholesale and retail trade is one where the integrated framework of the SNA imposes a partitioning of transactions. In the supply and use tables, it is important that wholesale and retail trade is appropriately reflected as one of the steps to move the valuation of domestic output by product at basic prices to purchasers' prices. Suppose all goods handled by wholesalers and retailers were shown as being delivered to the wholesaler or retailer and then supplied by them to the purchaser. The values in the rows for goods in the supply and use tables would be very small and not reflect purchasers' prices, implying that most goods would be used by wholesalers and retailers and very little supplied to other producing units, households or government. Even with grocers distinguished from furniture stores, it would no longer be possible to see exactly what types of food were being purchased and whether it was wooden or metal furniture being sold at purchasers' prices..

15.148 The standard treatment in a supply and use table, therefore, follows the rules for partitioning transactions

adopted for measuring the output of the wholesale and retail activity. Each acquisition of a product from a wholesaler or retailer is regarded as being the acquisition of two distinct products. One is the physical good, valued at basic prices, the other is the distribution margin. The purchase of the good is shown as a use of that good; the margin is shown as a use of services provided by wholesalers and retailers. As noted, though, portraying the activity of wholesalers and retailers in this way in a supply and use table is resource intensive since it is often the case that different proportionate margins are charged to different types of purchasers, for example households paying higher margins than enterprises. Indeed, even within households the margin on the same good in the same outlet may differ with larger quantities having a smaller proportionate margin than smaller quantities. The compiler has thus to apply a considerable amount of specialized knowledge and judgement to make this partition, including access to data on sales and purchases for resale on a detailed product level from wholesalers and retailers.

Transport margins

15.149 As explained in reviewing the difference between purchasers', producers' and basic prices, transport margins only occur when transport services are separately invoiced. If they are separately invoiced, then no partitioning is necessary because the transport service is already treated as a separate product. The compiler's task is demanding because, for instance, suppliers may sometimes offer free transport for purchases over a certain value and charge for smaller deliveries.

Taxes on products

15.150 The fact that VAT on the same product may be deductible for some users (typically producing units) and not deductible for others (households) is one reason why a supply and use table at purchasers' prices may be difficult to interpret. The apparent share of total use by households will be inflated by the element of non-deductible tax as compared with the proportion of use by producing units. After removing distribution and transport margins from purchasers' prices estimates, the next step is therefore to remove non-deductible VAT. Removing non-deductible VAT is reasonably straightforward for final users but may be more complicated for intermediate consumption where most, but not all, VAT may be deductible. Once non-deductible VAT is subtracted, the entries in the use table are valued at producers' prices.

15.151 For some countries it may not be possible to go beyond this but if possible removing other taxes on products as well is desirable, leaving the entries in the use table at basic prices. When this is done, it is necessary to introduce a new row into the use table. This is a row that shows the taxes on products payable by the producing unit concerned. This row is part of the cost of intermediate consumption at purchaser's prices in the same way as the entries for distribution and transport margins are. It will include some taxes on imports when imports that are part of intermediate consumption are subject to taxes on entry to the economy. This row of taxes within the intermediate consumption part of the use table should not be confused with the row that may appear in the value added part of the use table when output is valued at producers' prices. That row shows the amount of taxes on products payable on the products supplied by the unit, not the taxes on products payable by the unit on products used by them.

Subsidies on products

15.152 If it is possible to remove taxes on products from the entries in the use table, then subsidies on products must be added back also. There is no counterpart to VAT within subsidies so the elimination of subsidies matches the elimination of taxes on products other than VAT.

Separating imports from domestic production

15.153 A further refinement of the use table in basic prices is to separate imports from domestic production. In some cases, if the only source of a product is from the rest of the world, or if none of the product is imported, there is no problem in making the separation. When products are available from both domestic and foreign sources,

making the separation is difficult. One solution may be to work at a more disaggregated level if that helps identify products that are always or never imported, but in general making the separation is a process involving considerable expert knowledge and informed judgement.

15.154 Table 15.10 provides an overview of the imports use table. Table 15.15 shows the detailed import content of table 15.12. Table 15.15 shows columns 25, 28+29, 30 and 37 indicating the amount of imports going to each of intermediate consumption, (re-)exports, final consumption expenditure and capital formation.

Table 15.10: The imports content of the use table

	Intermediate consumption	Re-exports	Final consumption expenditure	Gross capital formation	Total imports
Agriculture, forestry and fishery products (0)	27	0	10	0	37
Ores and minerals; electricity, gas and water (1)	61	0	0	0	61
Manufacturing and other indusrrial products (2-4)	100	0	100	84	284
Constructions and construction services (5)	0	0	0	0	0
Trade, accommodation, food and beverage servicing services; transport services (6)	37	0	25	0	62
Financial and related services (7 less 72-73)	17	0	0	0	17
Real estate services; and rental and leasing services (72-73)	0	0	0	0	0
Business and production services (8)	0	0	5	0	5
Education, human health and social care services (92-93)	0	0	0	0	0
Other services (94-99)	0	0	0	0	0
Public administration and related services (91)	0	0	0	0	0
CIF/FOB adjustment	-5	0	-3	-2	-10
Direct purchases abroad by residents		0	43	0	43
Total imports	**237**	**0**	**180**	**82**	**499**

3. Expressing the use table in volume terms

15.155 The supply and use framework not only constrains the current value estimates of supply and use to balance exactly, it also provides a way to ensure that the corresponding volume estimates, expressed in the prices of another year, are in balance and that the series of prices implied by the existence of one table in current prices and one in volume terms are strictly consistent. In general, the best way to ensure mutual consistency is to prepare the supply and use tables in current values and in volume terms at the same time.

15.156 In most countries there are sets of price indices available for consumer prices, producer prices and import and export prices. Separate international manuals on the methodology and compilation of these exist. The general question of the development and use of appropriate prices to deflate national accounts is the subject of chapter 18 on Measuring prices, volumes and productivity. What follows, therefore, anticipates that general discussion but is provided here to complete the discussion on supply and use tables. The section illustrates the problems that need to be addressed in expressing a supply and use table in volume terms rather than giving detailed compilation advice. For that, reference should be made to the price manuals and to documents dedicated to the compilation of supply and use tables and input-output tables both in current prices and in volume terms, such as the *UN Handbook on Supply and Use Tables and Input-Output Tables with Extensions and Applications*. The preferred approach is to balance supply and use tables both in current prices and in volume terms, simultaneously at basic prices and at purchasers' prices. This may be resource and data intensive but provide various quality-related benefits improving consistency and coherency across the different domains.

Deflating which tables?

15.157 The first decision to be made in compiling supply and use tables in volume terms is whether to work with

tables in basic prices or in purchasers' prices or as preferred both simultaneously. There are arguments for and against each choice depending upon resources, time available, source data, systems, etc. These are covered in detail in the *UN Handbook on Supply and Use Tables and Input-Output Tables with Extensions and Applications* which brings all the various parts together into an integrated process.

15.158 When working with a basic price table, all the elements relating to distribution and transport margins and to taxes less subsidies on products will have been separated from the value of goods and services at basic prices. Confusingly, the prices known as producer price indices (PPIs) correspond not to the concept of producer prices in the integrated framework of the SNA but to basic prices. They exclude both distribution and transport margins and the effect of taxes less subsidies on products. PPIs therefore seem well suited to deflating the rows of a basic price supply and use table on the grounds that the entries along a row of the use table are more homogeneous than in the case of a purchasers' price table. However, the claim that the resulting entries are sufficiently homogeneous to justify using a single price index for each of them must be qualified. In addition, the elements referring to margins and taxes must be deflated separately (using the volume changes of the elements valued at basic prices and the rate of the margin or tax of the previous year applied to those volume changes give the volume changes of the margin or tax) and this raises conceptual and practical issues also.

15.159 When working with purchasers' prices, greater use is made of consumer price indices (CPIs) and fewer problems arise about the treatment of margins and taxes. However, although CPIs are generally held to be robust, their underlying assumptions might not always be entirely compatible with those in the supply and use tables.

15.160 Whether a purchasers' price table or a basic price table is being deflated, there are likely to be problems in deflating exports and imports.

Homogeneity

15.161 The justification for using PPIs to deflate the rows of a supply and use table is that the elements of the rows are sufficiently homogeneous to use a single price throughput the row. There are two reasons why this may not be so.

15.162 The elements of the rows at purchasers' prices are certainly not homogeneous as they include distribution and transport margins on the one hand and taxes less subsidies on the other. As noted, these may not fall on the same product in the same proportion for different users. Eliminating these entries should reduce this cause of non-homogeneity but there will inevitably be a degree of approximation involved in the exercise so some residual non-homogeneity from this cause will persist.

15.163 The other cause of non-homogeneity is due to aggregation. Even with a very large number of products distinguished in the supply and use tables, there is still a considerable degree of aggregation in each row. Even if screws were separated from other metal products, the price of screws varies according to the length, diameter, type of head and material they are intended to be used in. It is obviously impracticable to introduce a degree of disaggregation that would identify each of these types of screw separately and the thought of identifying screws separately from nails and other metal construction materials is already implausible. The problem of non-homogeneity is thus inevitable but may be reduced by considering the level of detail available in PPIs when determining the type of products to be identified in the supply and use tables.

The applicability of CPIs

15.164 CPIs are applicable for deflating household consumption at purchasers' prices but at a disaggregated level. The weights used to compile CPIs are usually not entirely consistent with the weights implicit in the column of expenditures for household consumption. This is because the weights may relate to another year and may exclude some categories of expenditure. The CPIs are likely to have been derived from a household survey. Household surveys often exclude the richest and poorest households, so the coverage is less comprehensive than the household consumption figures in the supply and use tables. As explained above, the act of balancing the table may cause some elements from the household survey to be amended. In the case of tobacco products, for instance, in principle similar adjustments to the CPI weights should also have been made but in some

other cases matching adjustments to the CPI weights may not have been made.

Imports and exports

15.165 Import price indices can be problematical. Many countries rely on unit value indices that do not take quality change into account adequately. Even when true import price indices are available, there is the problem of matching the degree of detail in the price indices with that of the products in the supply and use tables. Further, as mentioned in describing the correct valuation of imports, import price indices inevitably make different assumptions about how distribution and transport margins are paid for than may be the case for individual purchasers. This can be seen clearly in the case of export prices. The difference between export prices and PPIs for an identical product is due to the assumption that export prices are valued at the border of the economy whereas PPIs are valued as the goods leave the factory.

Distribution and transport margins

15.166 Distribution and transport margins also need to be expressed in volume terms. If the margin is the same proportion of the purchaser's price in the current year as in the base year, then the volume measure of the margin is simply that proportion of the volume of the expenditure in question; volume measure and price move in line with the product to which the margin applies. Often the rate of the margin will change between the base year and the current period either because of a difference in the rates of margins charged or because of a change in the mix of products in a group. Further discussion of the way to derive estimates of margins in volume terms may be found in the manuals on CPIs and PPIs.

Taxes less subsidies on products

15.167 Different approaches to expressing taxes less subsidies on products in volume terms are required depending on the way in which the tax is levied.

15.168 If a tax is calculated as a percentage of the value of an item (an ad valorem tax) such as VAT, the volume measure is calculated in the same manner as that described for distribution and transport margins.

15.169 Some taxes are levied according to the quantity of the item purchased. These are called "specific taxes" and excise duties typically are levied this way. For these taxes, the volume effect is strictly limited to changes in the quantity of the item purchased; any change in the rate of the specific tax is a price increase. The price increase of a specific tax may change in line with the general level of inflation but quite often it will move quite differently, for example if government wants to discourage spending on the item in question such as tobacco or alcohol.

15.170 Changes in tax regimes mean that from one year to the next the range of taxes levied changes with one disappearing and another replacing it. Volume series imply using not just the prices of the base year but also the tax structure. Thus volume series for an item may include a tax element that does not exist in the current values of the item and the tax element in the current value may not affect the volume series. In such a case a purchaser's price index is still valid but the concept of a "tax price index" is meaningless.

15.171 Subsidies on products are less common than taxes but if they exist, volume measures should be calculated using the same principles.

Value added

15.172 In the integrated framework of the SNA, balancing items such as value added are regarded as not having price and volume dimensions. Nevertheless, it is possible to express them "in real terms" by using the balancing item approach to derive a figure from the volume estimates of the other items in the account.

15.173 Given the existence of PPIs for the rows of the use table, these can be applied to the rows of the supply table also and the column sums then give a figure for output in volume terms. Deducting the figures for

intermediate consumption in volume terms derived from the deflation exercise for the product rows in the use table permits the calculation of value added for each type of producing unit as a residual. It is this residual that is described as being "in real terms". It is also possible to derive an implied deflator for value added by dividing the current value by the value in real terms.

15.174 Many analysts are interested in pursuing the question of deflating value added more explicitly. Calculating remuneration of employees in volume terms is possible if enough information is available on wage rates and numbers employed by category of worker. Allowance must be made for changes in non-wage remuneration and changes between full-time and part-time staff but there are few conceptual problems in deflating remuneration.

15.175 In order to deflate other taxes less subsidies on production, it is necessary to consider the basis on which the tax is levied. In most cases, other taxes on production relate to the numbers of some or all employees or the capital used in production. As with taxes on products, there may be both a price element and a quantity element involved in calculating changes in the volume measure.

15.176 Deriving figures for operating surplus and mixed income in real terms is possible by subtracting remuneration of employees and other taxes less subsidies on production in volume terms from value added in real terms. However, the advocates of the capital services approach to measuring operating surplus suggest a more direct means of deriving operating surplus in real terms. This approach is described in chapter 17 on Capital services.

F. Numerical example

1. The full supply and use table

15.177 Table 15.12 shows a full supply and use table. The topmost part consists of the supply table. The first column shows total supply at purchasers' prices. This is followed by information first on distribution and transport margins, as in table 15.2, and then on taxes and subsidies on products, as in table 15.5. Deducting the elements in all these columns from the corresponding elements in the column for total supply at purchasers' prices gives the next column, which is total supply at basic prices. This is followed by the largest part of the table, the supply of products by type of domestic producing units. This is an expanded form of table 15.1. At the extreme right of the supply table is the information on imports, corresponding to table 15.4.

15.178 The middle part of table 15.12 is the product part of the use table. The first column is total supply at purchasers' prices and corresponds exactly to the column above in the supply table. The next three columns are blank in the use table. Then the detailed information on use of products by type of producing unit is shown. This is the expanded version of table 15.6. The column for exports and columns for final consumption and capital formation follow. These correspond to tables 15.7 and 15.8.

15.179 Below the product part of the use table is the value added part. In the rows for taxes and subsidies, information on taxes and subsidies on production is shown. Details of the generation of income account for each of the types of producing unit are shown under their use of products as intermediate consumption. These entries correspond to the summary information in table 15.9. Information on capital formation by type of producing unit and labour input are also shown. There are no entries under the columns for exports, final consumption or capital formation.

2. Margins and taxes

15.180 Within table 15.12, row 3 shows that the value of manufactured products at basic prices is 1,998. To this value, subsidies of 5 are deducted, taxes of 94 and distribution and transport margins of 74 are added to give a value at purchasers' prices of 2,161. Within the use part of table 15.12, the whole of the value of 2,161 is accounted for. This means that the margins of 74 are accounted for in this way and not as demand on the trade and transport industry directly. In row 5 of the supply part of the table, therefore, these margins are shown as offsetting supply of distribution and transport services (along with margins of 2 apply to each of agricultural products and ores and minerals) so the total of distribution and transport margins at purchasers' prices shown in column 1 is less than the total at basic prices shown in column 5.

15.181 The right-most part of the supply table shows the way the margins on imports are handled. It is assumed that imports of goods are only available on a CIF basis. Within the balance of payments figures for imports of services, however, the figures of 6 and 4 will be included in the imports of services of these products. Thus column 27 shows the necessary adjustments. The negative entries of 6 and 4 are offset within the column by an adjustment item of 10 in a special row for the CIF/FOB adjustment. This in turn is offset by a negative entry in the same row within the column for the import of goods (column 28).

15.182 Instead of handling margins in this way, it is possible to reduce a supply and use table at purchasers' prices to basic prices by removing the margins and taxes from the purchasers' price estimates of all use elements. As explained in the last part of section E, this is often done as a basis for deflation of the table to volume terms. Table 15.13 shows the elements of distribution and transport margins, taxes on products and subsidies on products included in table 15.12. This table does not distinguish all the columns for each type of production but for ease of reference the column numbers in table 15.13 (and indeed for tables 15.14 and 15.15) correspond exactly to those used in table 15.12.

3. A use table at basic prices

15.183 Table 15.14 is the use table expressed in basic prices. It is derived by deducting all the relevant elements of table 15.13 from the corresponding elements of table 15.12. For reasons of compactness, it is presented in the abbreviated form with no distinction between market production, production for own final use and non-market production but the column numbering corresponds to the full version for ease of reference.

4. The imports use table

15.184 As well as removing the margin and tax elements from table 15.12, it is possible to also identify and remove that part of each element that represents supply from imports rather than from domestic production. In order to do this, a table similar to tables 15.12 and 15.14 must be compiled including imports only. Table 15.15 is such a table. This may then be deducted, element by element from table 15.14 to deduce a table showing the use of domestic production at basic prices only. (The imports use table excludes margins and taxes applying to imports so must be deducted from the basic price table and not the purchasers' prices one.) The imports use table also includes an exports column, to identify imports for re-export, which is especially relevant for countries that have re-exports.

15.185 Although a complete table showing domestic use only is not presented, table 15.11 shows in summary form how the total value of supply at purchasers' prices is built up from domestic supply, imports, distribution and transport margins, subsidies on products and taxes on products.

Table 15.11: Breakdown of use by producing units into the five elements making up purchasers' price valuation

	Intermediate consumption	Re-exports	Final consumption expenditure	Gross capital formation	Total imports
Agriculture, forestry and fishery products (0)	27	0	10	0	37
Ores and minerals; electricity, gas and water (1)	61	0	0	0	61
Manufacturing and other indusrrial products (2-4)	100	0	100	84	284
Constructions and construction services (5)	0	0	0	0	0
Trade, accommodation, food and beverage servicing services; transport services (6)	37	0	25	0	62
Financial and related services (7 less 72-73)	17	0	0	0	17
Real estate services; and rental and leasing services (72-73)	0	0	0	0	0
Business and production services (8)	0	0	5	0	5
Education, human health and social care services (92-93)	0	0	0	0	0
Other services (94-99)	0	0	0	0	0
Public administration and related services (91)	0	0	0	0	0
CIF/FOB adjustment	-5	0	-3	-2	-10
Direct purchases abroad by residents		0	43	0	43
Total imports	**237**	**0**	**180**	**82**	**499**

Table 15.12: Supply and use tables at purchasers' prices

	Supply of products	Total supply at purchasers' prices	Trade and transport margins	Taxes on products	Subsidies on products (-)	Total supply (basic prices)	Output by industries (by ISIC Categories) Market: Agriculture, forestry and fishing	Manufacturing and other industry	Construction	Trade, transport, accommodation and food	Information and communication	Finance and insurance activities	Real estate activities	Business services	Education, human health and social work	Other services	Sub-total market
		(1)	(2)	(3)	(4)	(5)	(A) (6)	(B-E) (7)	(F) (8)	(G-I) (9)	(J) (10)	(K) (11)	(L) (12)	(M-N) (13)	(P-Q) (14)	R-T and U (15)	(16)
	Products (by CPC sections)																
1	Agriculture, forestry and fishery products (0)	128	2	5	- 3	124	78	0	0	0	0	0	0	0	0	0	78
2	Ores and minerals; electricity, gas and water (1)	263	2	5	0	256	0	195	0	0	0	0	0	0	0	0	195
3	Manufacturing and other industrial products (2-4)	2 161	74	94	- 5	1 998	0	1 650	6	24	18	0	0	9	0	0	1 707
4	Constructions and construction services (5)	261	0	17	0	244	0	7	201	3	2	0	0	0	0	0	213
5	Trade, accommodation, food and beverage servicing services; transport services (6)	216	- 78	5	0	289	0	6	1	226	0	0	0	0	0	0	233
6	Financial and related services (7 less 72-73)	159	0	0	0	159	0	0	0	0	0	144	0	0	0	0	144
7	Real estate services; and rental and leasing services (72-73)	195	0	0	0	195	0	2	0	4	0	0	94	0	0	0	100
8	Business and production services (8)	272	0	11	0	261	0	1	0	3	80	0	0	172	0	0	256
9	Education, human health and social care services (92-93)	275	0	0	0	275	0	0	0	0	0	0	0	0	63	0	63
10	Other services (94-99)	95	0	4	0	91	0	0	0	2	0	0	0	2		82	86
11	Public administration and related services (91)	168				168											
12	CIF/FOB adjustment on imports	0				0											
13	Direct purchases abroad by residents	43				43											
14	Total	4 236	0	141	- 8	4 103	78	1 861	208	262	100	144	94	183	63	82	3 075

	Use of products	Total supply at purchasers' prices	Taxes on products	Subsidies on products	Intermediate consumption of industries (by ISIC categories) Market: Agriculture, forestry and fishing	Manufacturing and other industry	Construction	Trade, transport, accommodation and food	Information and communication	Finance and insurance	Real estate activities	Business services	Education, human health and social work	Other services	Sub-total market
		(1)	(3)	(4)	(A) (6)	(B-E) (7)	(F) (8)	(G-I) (9)	(J) (10)	(K) (11)	(L) (12)	(M-N) (13)	(P-Q) (14)	R-T and U (15)	(16)
	Products (by CPC section)														
	Total uses														
1	Agriculture, forestry and fishery products (0)	128			2	71	0	3	1	2	1	2	0	0	82
2	Ores and minerals; electricity, gas and water (1)	263			3	190	1	6	3	2	1	2	0	0	208
3	Manufacturing and other industrial products (2-4)	2 161			27	675	63	44	16	16	9	19	4	5	878
4	Constructions and construction services (5)	261			1	9	5	3	1	1	1	1	0	0	22
5	Trade, accommodation, food and beverage servicing services; transport services (6)	216			3	65	3	25	4	4	2	4	0	0	110
6	Financial and related services (7 less 72-73)	159			1	36	5	18	1	3	3	7	1	1	76
7	Real estate services; and rental and leasing services (72-73)	195			1	15	1	8	2	5	2	4	0	1	39
8	Business and production services (8)	272			2	70	12	15	10	18	9	19	7	9	171
9	Education, human health and social care services (92-93)	275			0	1	0	0	0		0	1	0	0	2
10	Other services (94-99)	95			1	1	0	1	1	1	0	1	0	0	6
11	Public administration and related services (91)	168			0	0	0	0	0	0	0	0	0	0	0
12	Direct purchases abroad by residents	43													0
13	Domestic purchases by non-residents	0													0
14	Total	4 236			41	1 133	90	123	39	52	28	60	12	16	1 594
15	Total gross value added/GDP		141	- 8	37	728	118	139	61	92	66	123	51	66	1 481
16	Remuneration of employees				19	547	79	102	32	42	49	79	43	47	1 039
17	Taxes less subsidies on production and imports		141	- 8	- 2	43	5	- 5	- 1	4	6	4	1	1	56
18	Mixed income, gross				4	30	3	9	0	0	0	0	0	0	46
19	Operating surplus, gross				16	108	31	33	30	46	11	40	7	18	340
20	Depreciation - gross mixed income				1	3	0	1	0	0	0	0	0	0	5
21	Depreciation - gross operating surplus				8	80	11	30	7	12	5	12	1	2	168
22	Depletion - gross operating surplus				0	0	0	0	0	0	0	0	0	0	0
23	Depletion - gross mixed income				0	30	0	0	0	0	0	0	0	0	30
24	Total output				78	1 861	208	262	100	144	94	183	63	82	3 075
25	Labour inputs (hours worked)				1 840	31 962	4 244	8 786	1 332	1 290	920	1 562	494	642	53 072
26	Gross fixed capital formation				10	122	8	49	14	7	5	7	1	2	225
27	Closing stocks of fixed assets				142	1 861	143	731	208	143	102	147	22	29	3 528

Table 15.12 (cont): Supply and use tables at purchasers' prices

Own final use				Non-market							Imports	
Agriculture, forestry and fishing	Construction	Real estate and private household services	Sub-total own final use	Finance and insurance	Education, human health and social services	Public administration, defence, social security, other public services	Sub-total non-market	Total industry	Total economy	CIF/FOB adjustments on imports	Goods	Services
(A)	(F)	(L+T)		(K)	(P-Q)	(O)						
(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)
9	0	0	9	0	0	0	0	87			37	
0	0	0	0	0	0	0	0	195			61	
2	5	0	7	0	0	0	0	1 714			284	
0	31	0	31	0	0	0	0	244				
0	0	0	0	0	0	0	0	233		- 6		62
0	0	0	0	2	0	0	2	146		- 4		17
0	0	95	95	0	0	0	0	195				
0	0	0	0	0	0	0	0	256				5
0	0	0	0	0	215	0	215	278				0
0	0	5	5	0	0	0	0	91				0
						178	178	178				
										10	- 10	
											20	23
11	36	100	147	2	215	178	395	3 617		0	392	107

Intermediate consumption of industries (by ISIC categories)											Final consumption expenditure							Gross capital formation			
Own final use				Non-market						Exports					General government						
Agriculture, forestry and fishing	Construction	Real estate and private household services	Sub-total own final use	Finance and insuranc	Education, human health and social services	Public Administration	Sub-total non-market	Total industry	Total economy	Goods	Services	Sub-total final consumptio expenditure	Households	NPISHs	Central bank	Sub-total	Collective	Individual	Sub-total gross capital formation	Gross fixed capital formati	Changes in inventories	Acquisition less disposals valuables
(A)	(F)	(L)		(K)	(P-Q)	(O)															
(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)
1	0	0	1	0	3	2	5	88			7	0	30	28	0	0	2	0	2	3	2	1	
0	0	0	0	0	5	4	9	217			7	0	40	40	0	0	0	0	0	- 1	0	- 1	
5	17	10	32	0	42	38	80	990			422	0	573	570	0	0	3	0	3	176	161	5	10
0	0	0	0	0	11	7	18	40			6	0	2	2	0	0	0	0	0	213	190	23	
0	0	0	0	0	4	5	9	119			0	55	42	42	0	0	0	0	0				
0	2	3	5	0	6	15	21	102			0	2	55	53	0	2	0	0	0				
0	0	0	0	0	8	10	18	57			0	1	115	115	0	0	0	0	0	22	22	0	
0	5	7	12	0	15	24	39	222			0	9	40	40	0	0	0	0	0	1	1	0	
0	0	0	0	0	24	8	32	34			0	2	242	21	33	0	188	12	176				
0	0	0	0	0	2	2	4	10			0	0	85	85	0	0	0	0	0				
0	0	0	0	0	1	1	2	2				0	176	5	2	0	169	166	3				
													43	43									
											20	9	- 29	- 29									
6	24	20	50	0	121	116	237	1 881			462	78	1 414	1 015	35	2	362	178	184	414	376	28	10
5	12	80	97	2	94	62	158	1 736	1 869														
0	0	0	0	2	70	39	111	1 150	1 150														
0	0	0	0	0	1	1	2	58	191														
3	12	0	15					61	61														
2	0	80	82	0	23	22	45	467	467														
3	0	0	3					8	8														
1	0	15	16	0	20	10	30	214	214														
0	0	0	0	0	0	0	0	0	0														
0	0	0	0	0	0	0	0	30	30														
11	36	100	147	2	215	178	395	3 617	3 617														
218	780	0	998		7 299	8 000	15 299	69 369															
1	1	124	126		13	12	25	376															
17	17	1 851	1 885		201	169	370	5 783															

Table 15.13: Supply and use table: trade and transport margins, taxes and subsidies on intermediate and final use of products

	Uses of products	Total uses	Intermediate consumption of industries (by ISIC categories) Market: Agriculture, hunting, forestry, fishing (A)	Manufacturing, and other industry (B-E)	Construction (F)	Trade, transport, accommodation and food (G-I)	Information and communication (J)	Finance and insurance activities (K)	Real estate activities (L)	Business services (M-N)	Education, human health and social work (P-Q)	Other services (-T and U)	Sub-total market	Own final use: Agriculture, hunting, forestry, fishing (A)	Construction (F)	Real estate, household services (L+T)	Sub-total own final use	Non-market: Finance and insurance (K)	Education, health, social services (P-Q)	Public administration, defence, social securit other public services (O)	Sub-total non-market	Total industry	Exports: Goods	Services	Final consumption expenditure: Sub-total	Households	NPISHs	General government: Central bank	Sub-total	Collective	Individual	Gross capital formation: Sub-total	Gross fixed capital formation	Changes in inventories	Acquisition less disposals of valuables
		(1)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)
	Products (by CPC sections)																																		
	Total uses																																		
1	Agriculture, forestry and fishery products (0)																																		
	Trade and transport margins	2	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	
	Taxes on products	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	0	0	0	0	0	0	0	0	
	Subsidies on products	-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-3	-3	0	0	0	0	0	0	0	0	
2	Ores and minerals; electricity, gas and water (1)																																		
	Trade and transport margins	2	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	
	Taxes on products	5	0	4	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	4	0	0	1	1	0	0	0	0	0	0	0	0	
3	Manufacturing and other industrial products (2-4)																																		
	Trade and transport margins	74	1	25	3	2	0	0	0	0	0	0	31	0	0	0	0	0	0	4	4	35	16	0	20	20	0	0	0	0	0	3	3	0	0
	Taxes on products	94	1	26	4	0	0	0	0	0	0	0	31	0	0	0	0	0	0	1	1	32	10	0	48	48	0	0	0	0	0	4	4	0	0
	Subsidies on products	-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-5	-5	0	0	0	0	0	0	0	0	0
4	Constructions and construction services (5)																																		
	Taxes on products	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	17	0	0
5	Trade, accommodation, food and beverage servicing services; transport services (6)																																		
	Taxes on products	5	0	2	0	1	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3	0	0	2	2	0	0	0	0	0	0	0	0	0
6	Financial and related services (7 less 72-73)																																		
	Taxes on products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	Real estate services; and rental and leasing services (72-73)																																		
	Taxes on products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8	Business and production services (8)																																		
	Taxes on products	11	0	3	1	1	0	1	1	0	0	0	7	0	0	0	0	0	1	1	2	9	0	0	2	2	0	0	0	0	0	0	0	0	0
9	Education, human health and social care services (92-93)																																		
	Taxes on products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	Other services (94-99)																																		
	Taxes on products	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0
11	Public administration and related services (91)																																		
	Taxes on products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total trade and transport margins	78	1	28	3	2	0	0	0	0	0	0	34	0	0	0	0	0	0	4	4	38	16	0	21	21	0	0	0	0	0	3	3	0	0
	Total taxes on products	141	1	35	5	2	0	1	1	0	0	0	45	0	0	0	0	0	1	2	3	48	10	0	62	62	0	0	0	0	0	21	21	0	0
	Total subsidies on products	-8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-8	-8	0	0	0	0	0	0	0	0	0

Table 15.14: Supply and use table: Final and intermediate uses at basic prices, ISIC breakdown

	Use of products	Total uses at basic prices	Taxes less subsidies on products	Intermediate consumption of industries (by ISIC categories): Agriculture, forestry and fishing	Manufacturing and other industry	Construction	Trade, transport, accommodation and food	Information and communication	Finance and insurance	Real estate activities	Business services	Education, human health and social work	Other services	Public administration, defence, social security, other public services	Total industry	Total economy	Exports: Goods	Services	Final consumption expenditure: Sub-total final consumption expenditure	Households	NPISHs	Central bank	General government: Sub-total	Collective	Individual	Gross capital formation: Sub-total gross capital formation	Gross fixed capital formation	Changes in inventories	Acquisition less disposals of valuables
				(A)	(B-E)	(F)	(G-I)	(J)	(K)	(L)	(M-N)	(P-Q)	(R-T) + U	(O)															
		(1)	(3)-(4)	(6)+(17)	(7)	(8)+(18)	(9)	(10)	(11)+(21)	(12)	(13)	(14)+(22)	(15)	(23)	(25)	(26)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)
	Products (by CPC section)																												
	Total uses																												
1	Agriculture, forestry and fishery products (0)	124		3	70	0	3	1	2	1	2	3	0	2	87		7	0	27	25	0	0	2	0	2	3	2	1	0
2	Ores and minerals; electricity, gas and water (1)	256		3	184	1	6	3	2	1	2	5	0	4	211		7	0	39	39	0	0	0	0	0	- 1	0	- 1	0
3	Manufacturing and other industrial products (2-4)	1 998		30	624	73	42	16	16	19	19	46	5	33	923		396	0	510	507	0	0	3	0	3	169	154	5	10
4	Constructions and construction services (5)	244		1	9	5	3	1	1	1	1	11	0	7	40		6	0	2	2	0	0	0	0	0	196	173	23	0
5	Trade, accommodation, food and beverage servicing services; transport services (6)	289		4	91	6	26	4	4	2	4	4	0	9	154		16	55	61	61	0	0	0	0	0	3	3	0	0
6	Financial and related services (7 less 72-73)	159		1	36	7	18	1	3	6	7	7	1	15	102		0	2	55	53	0	2	0	0	0	0	0	0	0
7	Real estate services; and rental and leasing services (72-73)	195		1	15	1	8	2	5	2	4	8	1	10	57		0	1	115	115	0	0	0	0	0	22	22	0	0
8	Business and production services (8)	261		2	67	16	14	10	17	15	19	21	9	23	213		0	9	38	38	0	0	0	0	0	1	1	0	0
9	Education, human health and social care services (92-93)	278		0	1	0	0	0	0	0	1	24	0	8	34		0	2	242	21	33	0	188	12	176	0	0	0	0
10	Other services (94-99)	91		1	1	0	1	1	1	0	1	2	0	2	10		0	0	81	81	0	0	0	0	0	0	0	0	0
11	Public administration and related services (91)	178		0	0	0	0	0	0	0	0	1	0	1	2		0	0	176	5	2	0	169	166	3	0	0	0	0
12	Domestic purchases by non–residents	0		0		0				0		0					20	9	- 29	- 29						0			
13	Direct purchases abroad by residents	43		0		0				0	0	0							43	43						0			
14	Total uses at basic prices	4 116		46	1 098	109	121	39	51	47	60	132	16	114	1 833		452	78	1 360	961	35	2	362	178	184	393	355	28	10
15	Taxes less subsidies on products	133		1	35	5	2	0	1	1	0	1	0	2	48		10	0	54	54	0	0	0	0	0	21	21	0	0
16	Total uses in purchasers' prices	4 249		47	1 133	114	123	39	52	48	60	133	16	116	1 881		462	78	1 414	1 015	35	2	362	178	184	414	376	28	10
17	Total gross value added/GDP		133	42	728	130	139	61	94	146	123	145	66	62	1 736	1 869													
18	Remuneration of employees			19	547	79	102	32	44	49	79	113	47	39	1 150	1 150													
19	Taxes less subsidies on production and imports		133	- 2	43	5	- 5	- 1	4	6	4	2	1	1	58	191													
20	Mixed income, gross			7	30	15	9	0	0	0	0	0	0	0	61	61													
21	Operating surplus, gross			18	108	31	33	30	46	91	40	30	18	22	467	467													
22	Depreciation - gross mixed income			4	3	0	1	0	0	0	0	0	0	0	8	8													
23	Depreciation - gross operating surplus			9	80	26	30	7	12	5	12	21	2	10	214	214													
24	Depletion - gross mixed income			0	0	0	0	0	0	0	0	0	0	0	0	0													
25	Depletion - gross operating surplus			0	30	0	0	0	0	0	0	0	0	0	30	30													
26	Total output			89	1 861	244	262	100	146	194	183	278	82	178	3 617	3 617													

Table 15.15: Imports used for intermediate consumption and final uses

Products (by CPC section)	Intermediate consumption												Re-exports	Final consumption expenditure								Gross capital formation				Imports	
																		General government									
	Agriculture, forestry and fishing	Manufacturing and other industry	Construction	Trade, transport, accommodation and food	Information and communication	Finance and insurance activities	Real estate activities	Business services	Education, human health and social work	Other services	Public administration, defence, social security other public services	Total industry		Sub-total	Households	NPISHs	Central bank	Sub-total	Collective	Individual	Sub-total	Gross fixed capital formation	Changes in inventories	Acquisition less disposals of valuables	Goods	Services
	(A)	(B-E)	(F)	(G-I)	(J)	(K)	(L)	(M-N)	(P-Q)	R-T and U	(O)																
	(6)+(17)	(7)	(8)+(18)	(9)	(10)	(11)+(21)	(12)	(13)	(14)+(22)	(15)	(23)	(25)	(28)+(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)	(28)	(29)
Total uses																											
1 Agriculture, forestry and fishery products (0)	0	27	0	0	0	0	0	0	0	0	0	27	0	10	10	0	0	0	0	0	0	0	0	0	37	
2 Ores and minerals; electricity, gas and water (1)	0	61	0	0	0	0	0	0	0	0	0	61	0	0	0	0	0	0	0	0	0	0	0		61	
3 Manufacturing and other industrial products (2-4)	0	95	0	5	0	0	0	0	0	0	0	100	0	100	100	0	0	0	0	0	84	74	0	10	284	
4 Constructions and construction services (5)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 Trade, accommodation, food and beverage servicing services; transport services (6)	0	25	0	11	0	0	0	1	0	0	0	37	0	25	25	0	0	0	0	0	0	0	0	0	0	62
6 Financial and related services (7 less 72-73)	0	5	0	0	0	7	0	5	0	0	0	17	0	0	0	0	0	0	0	0	0	0	0	0	0	17
7 Real estate services; and rental and leasing services (72-73)	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 Business and production services (8)	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	5
9 Education, human health and social care services (92-93)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10 Other services (94-99)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11 Public administration and related services (91)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 CIF/FOB adjustment		-5										-5		-3	-3						-2	-2			-10	
13 Direct purchases abroad by residents														43	43										20	23
14 Total imports	0	208	0	16	0	7	0	6	0	0	0	237	0	180	180	0		0	0	0	82	72	0	10	392	107

Chapter 16: Labour

A. Introduction

16.1 There are many key policy questions that hinge on a better understanding of the labour market and its links and interactions with various aspects of the economy. One can think of the impact on the labour market and the changing nature of "work" from changes in production arrangements, including those caused by legislation (e.g., introduction of a minimum wage or a working hours directive), technological innovation (e.g., demand for new skills and new jobs), process and product innovation, globalisation (e.g., jobs moving to lower income countries), digitalisation (e.g., impact of more jobs becoming temporary, or done by independent workers) and the move to environmental sustainability (e.g., the demand for labour in environmentally related activities). These issues can affect the numbers employed and how they are deployed. Wages and labour costs are another important dimension of labour as they represent both a large share of the production costs and often the main source of households' income.

16.2 Like various aspects of economic developments, understanding the changing landscape of the labour market is becoming more difficult. More integration of the statistical domains is an important aid to understanding these changes, including their interrelationships. The transformation of the labour market and skills and knowledge needs in turn affect employment, unemployment, education, and, more generally, living standards, quality of life, and retirement.

16.3 The use of labour is at the heart of production, forming an input alongside capital. The two categories of labour input in the national accounts, that is, labour provided by employees and self-employed, are based on the residency and production conventions. These are recognised in the integrated framework of economic accounts through remuneration of employees and, albeit implicitly, mixed income as well as labour input by industry. Labour has a prominent role in the SNA given its importance in the production process and its linkages to other areas of interest such as the analysis of unit labour costs, hours worked, labour productivity, income inequalities, per capita estimates, etc. It is also important to have better insights into related aspects such as human capital, education and health care as well as wider links to skills demand and skills shortages. Furthermore, labour market data also provide insights into aspects of well-being.

16.4 The concept of labour used in national accounts is closely linked to the coverage of production in the integrated framework of the SNA. This comprises multiple forms of work as defined in the international statistical standards (resolutions) on work and the labour force as endorsed by the International Conference of Labour Statisticians (ICLS) – in particular resolution I of the *19th ICLS Resolution concerning statistics of work, employment and labour underutilization*) – a process hosted by the International Labour Organization (ILO). Section C contains a concise overview of the correspondence between the definitions applied in these *ICLS Resolutions* and the concepts used in the integrated framework of national accounts.

16.5 This chapter on labour is structured as follows. Section B covers a brief overview of the SNA framework and its principles in relation to labour. Section C covers the types of labour and work in the integrated framework, including a comparison with the relevant *ICLS Resolutions*. Section D then follows with an overview of labour market tables, including their links to supply and use tables. Section E deals with some enhanced measures of labour inputs, while section F discusses some other specific issues.

B. Brief overview of the SNA framework and principles in relation to labour

16.6 It is important to draw out some of the features and principles of the SNA in relation to labour, and its connection to the output recorded in the integrated framework of the SNA, which are key in the analysis of production activities. This in turn has links with the *ICLS Resolutions* on recording labour, which will be referred to as appropriate in the chapter.

1. The production boundary of the integrated framework of the SNA

16.7 In the integrated framework of the SNA, production is defined as an activity, carried out under the responsibility, control and management of an institutional unit, that uses inputs of labour, capital and goods and services to produce outputs of goods and services. As such, there is a direct link between the production of goods and services and the labour used in this production. More specifically, production includes the production of goods and services supplied, or intended to be supplied, to units other than their producers; the own-account production of goods retained by their producers for their own final consumption or gross capital formation; the own-account production of housing services by owner-occupiers; and the production of domestic and personal services by employing paid domestic staff. More details on the production boundary applied in the integrated framework of the SNA are provided in chapter 7 on Production account.

16.8 The integrated framework of the SNA strictly confines the concept of labour input to the input to the production activities within the production boundary applied in this framework, although in the extended accounts on unpaid household service work a broader concept of production is applied (see section F). On the other hand, the various forms of work identified in the *19th ICLS Resolution*, as presented in figure 16.1, can be aligned to either the general production boundary, when all forms of work are included, or the production boundary applied in the integrated framework of the SNA, when direct volunteer work providing services and the production of services by households for own final use are excluded (with the exception of owner-occupied housing services and the production of domestic and personal services by employing paid domestic staff). In this respect, it is worth noting that activities may move in and out the production boundary applied in the integrated framework of the SNA. For example, due to digitalisation, one can observe changes from households buying services from travel agencies to arranging travel themselves, or using the services provided by supermarkets to using self-service checkouts. On the other hand, one can also observe a trend of purchasing services which were traditionally produced by households themselves (e.g., using the services of kindergartens instead of taking care of children at home, or eating outside instead of preparing and eating meals at home). Whatever the case, there is a clear link between what is defined as production in the integrated framework of the SNA and the notion of labour.

Figure 16.1: Production boundary links to the forms of work and employment framework

2. Population, labour and residency

16.9 In monitoring labour as defined in the integrated framework of the SNA, the residency of the population and

the residency of the units producing goods and services are equally relevant. Details on both notions are fully described in chapter 5 on Institutional units and sectors, economic territory and residence. ***The total population of a country consists of all persons who are resident in the economic territory at a given point in time***. In the integrated framework of national accounts, ***the labour force consists of all resident persons who are actively prepared to make their labour available during any particular reference period for producing goods and services that are included within the production boundary applied in the integrated framework of the SNA.*** The labour force is further divided into those who are providing labour input (employed) and those who are seeking and available to do so (unemployed). A person's status depends on their activity (or lack of it) during a particular reference period (usually a week).

16.10 The above definition of the labour force is slightly different from the one defined in the *ICLS Resolutions*, which limits employment to all resident persons who are actively prepared to make their labour available during any part of the reference period for producing goods and services in return for pay or profit. In the integrated framework of the SNA, the concept of labour input is somewhat broader, as it also includes labour which is used as an input into the household production of goods for own final use, some types of volunteer work as well as unpaid trainee work. As a consequence, the breakdown of the labour force into employed persons and unemployed persons in the integrated framework of the SNA is not mutually exclusive. While the definition of unemployed persons is similar, in the integrated framework of the SNA some unemployed persons may also be part of labour input, such as those who are involved in the production of goods for own final use and also looking for work for pay or profit.

16.11 In monitoring labour input, the perspective of looking at the resident population is different from the focus of the national accounts: the labour input in domestic production, for which the residency of the units producing goods and services is the starting point. Employed persons providing labour input consist of two main groups: employees and self-employed. Self-employed persons provide labour input to production by resident institutional units by convention. This is not true for employees who do not have to be residents in the economy where they work. While labour input mainly consists of resident employees working for resident institutional units and self-employed persons, it also includes the following categories of persons employed by resident institutional units where there might be a question whether they are considered resident or not:

- non-resident border workers (sometimes called frontier workers), including non-resident workers working from home;
- non-resident seasonal workers, that is, persons who move into the economic territory and stay there for less than one year in order to work in industries which periodically require additional labour;
- members of the country's armed forces stationed in the rest of the world;
- nationals who are on the staff of national scientific bases established outside the geographic territory of the country;
- nationals who are on the staff of diplomatic missions abroad;
- members of the crews of fishing boats, other ships, aircraft and floating platforms operated by resident units;
- employees of general government bodies situated outside the geographic territory, for example embassies; and
- students undertaking work are included or not according to their classification as resident or non-resident.

16.12 On the other hand, the following residents, though employees, are excluded from labour input in resident institutional units and hence from measures of labour input as used in the context of the integrated framework of the SNA:

- residents who are border workers or seasonal workers, that is, who work as employees in another economic territory;
- nationals who are members of the crews of fishing boats, other ships, aircraft and floating platforms operated by non-resident units;

- residents who are employees of foreign government agencies located on the geographic territory of the country;
- the personnel of international civilian organizations located within the geographic territory of the country (including local employees directly recruited);
- members of the armed forces working with international military organisations located on the geographic territory of the country;
- nationals working in foreign scientific bases established in the economic territory.

16.13 In more general terms, the link between resident persons providing labour input, i.e., the labour force excluding unemployed persons, and persons providing labour input to domestic production can be described as follows:

Labour input to domestic production

equals

resident persons providing labour input to resident producer units

minus resident persons providing labour input to non-resident producer units

plus non-resident persons providing labour input to resident producer units

It is important to note that this is a key difference between the integrated framework of the SNA and social statistics. While for the latter the resident population would be the normal reference point for compiling labour statistics, the national accounts mainly focus on labour input to domestic production. Having said that, the labour market tables discussed in section D also provide a link with resident employed persons within the (national) labour force, by deducting non-resident employees working for resident producer units, and adding resident employees working for non-resident producer units.

16.14 The labour force also includes ***unemployed persons (LAB51), defined as persons who are not employed but available for work and actively seeking work for pay or profit***. In the integrated framework of the SNA, the concept of unemployment is not directly incorporated, only the population of employed persons contributing their labour input to economic activities within the production boundary of the integrated framework is directly relevant. As noted before, the concept of employment typically applied in labour statistics differs slightly from the concept of labour input in the integrated framework, as the former only refers to work for pay or profit, thus excluding, for example, work related to household production of goods for own final use (see also paragraph 16.67). Whatever the case, knowing about the numbers of unemployed is analytically important in understanding, for example, labour market tightness or surplus labour within an economy at any point in time (e.g., by monitoring unemployment to vacancy ratios). Unemployment also has a direct impact on well-being of people and may also affect government finance by increasing benefit claims and decreasing the tax base.

C. Types of labour and work in the integrated framework of the SNA and links to the ICLS standards

16.15 As explained in the previous section, labour input, as defined in the integrated framework of the SNA, consists of three groups of persons: residents who are employees of resident institutional units, non-residents who are employees of resident institutional units, and self-employed persons. (A self-employed person is necessarily associated with a resident household. If such a person provides goods and services abroad, these are recorded as exports.) In the integrated framework of the SNA, ***labour input (LAB3) is defined as all persons, both employees and self-employed persons, engaged in some productive activity that falls within the production boundary of the integrated framework of the SNA and that is undertaken by a resident institutional unit.***

16.16 This section first explains the concepts of employees and self-employed persons as defined in the in the integrated framework of the SNA in more detail. Subsequently, some boundary problems are covered such as labour in NPISHs and volunteer work. The section concludes with a concise summary of the similarities

and the differences between the integrated framework of the SNA and the *ICLS Resolution* in defining labour market related concepts.

1. Employees

16.17 ***Employees (LAB31) are persons who, by agreement, work for a resident institutional unit and receive remuneration for their labour. A resident institutional unit may employ both resident and non-resident persons.*** Some volunteers and unpaid trainees may also be classified as employees (see paragraphs 16.32 to 16.36 and paragraphs 16.47 to 16.48). The compensation of employees is recorded in the integrated framework of the SNA as remuneration of employees. The relationship of employer to employee exists when there is an agreement, which may be formal or informal (written or verbal), between the employer and a person, normally entered into voluntarily by both parties, whereby the person works for the employer in return for remuneration in cash or in kind. There is no requirement that the employer should declare the agreement to any official authority for the status of employee to apply. It should be noted that the term "employees" for SNA purposes is not synonymous with the category "employees" as defined in Resolution I of the *20th ICLS Resolution concerning statistics on work relationships*, which includes persons with an agreement of employment only.

16.18 Employees include but are not confined to the following categories:

a. persons (manual and non-manual workers, management personnel, domestic staff, people carrying out remunerated productive activity under employment programs, independent of disabilities, citizenship, etc.) engaged by an employer under a contract, or an agreement, of employment;

b. civil servants and other government employees whose terms and conditions of employment are laid down by public law;

c. the armed forces, consisting of those who have enlisted for both long and short engagements and conscripts (including conscripts working for civil purposes);

d. ministers of religion, if they are paid directly by general government or a non-profit institution;

e. owners of corporations and quasi-corporations, if they work in these enterprises and receive paid remuneration other than withdrawal of earnings from the quasi-corporation;

f. students who have a formal commitment whereby they contribute some of their own labour as an input into an enterprise's process of production in return for remuneration and (or) education services;

g. disabled workers, provided that the formal or informal relationship of employer to employee exists; and

h. persons employed by temporary employment agencies, who are to be included in the industry of the agency which employs them, and not in the industry of the enterprise for which they actually work.

16.19 Persons that have a commercial contract with an institutional unit for the provision of goods or services are not considered employees but as self-employed persons.

16.20 An outworker is a person who agrees to work for a particular enterprise or to supply a certain quantity of goods and services to a particular enterprise by prior arrangement or contract with that enterprise but whose place of work is not within it. An outworker is treated as an employee if there is an explicit agreement that the outworker is compensated based on the time worked, that is the amount of labour contributed as an input into some process of production. There is further discussion of the classification of outworkers in paragraphs 8.34 to 8.39.

16.21 Employers across a range of industries may use zero-hour contract workers. These contracts effectively mean that employers are not obliged to guarantee any working hours to a worker. Equally, the worker is not obliged to accept any work that is offered to them and they are also free to work for other employers. These workers provide labour input and are employees recorded under short-term and casual employees.

16.22 Persons temporarily not at work are also considered as employees if they have a job attachment. This

attachment should be determined according to one or more of the following criteria:

a. the continued receipt of wage or salary.

b. an assurance of return to work following the end of the contingency or an agreement as to the date of return.

c. the elapsed duration of absence from the job which, wherever relevant, may be that duration for which workers can receive compensation benefits without obligations to accept other jobs.

16.23 Persons included in the above classification are those temporarily not at work because of illness or injury, holiday or vacation, strike or lockout, educational or training leave, parental leave, reduction in economic activity, temporary reorganisation or suspension of work due to such reasons as bad weather, mechanical or electrical breakdown, or shortage of raw materials or fuels, or other temporary absence with or without leave. This includes persons in receipt of a wage such as during the COVID-19 lockdown period(s), even when no output was produced. For some purposes, it may be useful to distinguish employees temporarily not at work if this is possible. Under the *19th ICLS Resolution*, for certain types of absence, a person is still considered employed (for example, maternity/paternity leave, sick leave, shift work/nature of the work and vacation), whilst for other reasons (for example, career break or unpaid leave), it is recommended to assess additional criteria to determine if a job attachment continues to exist

16.24 Managers of corporations are treated in the integrated framework of the SNA as employees. Accordingly, owners of some unincorporated enterprises which in the integrated framework are classified as quasi-corporations are treated as employees, if they provide labour input and receive compensation in the form of remuneration of employees. According to the *ICLS Resolutions*, owners of quasi-corporations are treated as independent workers in employment for profit or dependent contractors.

16.25 Trainees who have a formal commitment to contribute labour as an input to an enterprise's process of production in return for remuneration in cash or in kind such as education are also treated as employees. As defined in the *ICLS Resolutions*, trainees receiving remuneration in cash would also be counted as employees. However, if the only "remuneration" is education, then they are not considered as employed and classified under "unpaid trainee work".

2. Self-employed persons

16.26 ***Self-employed persons (LAB32) are persons who are the sole or joint owners of the unincorporated enterprises in which they work, excluding those unincorporated enterprises that are classified as quasi-corporations.*** Persons who work in unincorporated enterprises are classified as self-employed persons if they are not in paid employment that constitutes their principal source of income. If in paid employment, they are classified as employees. The compensation for self-employment is included in mixed income because it is not possible to observe separately the return to labour and the return to any capital used in production of goods and services by the unincorporated enterprise. In cases where a single person has multiple jobs and is both an employee and a self-employed person, the income earned as an employee should be shown as remuneration of employees and separated from the mixed income element. For some analytical purposes, however, it may be useful to estimate a breakdown of labour compensation for the self-employed and the return to capital (see paragraphs 16.85 – 16.88).

16.27 Within the integrated framework of the SNA, self-employed persons also include the following categories:

- contributing family workers working in unincorporated enterprises;
- outworkers whose income is a function of the value of the outputs from some process of production for which they are responsible, however much or little work was put in (see also paragraphs 8.34 to 8.39);
- workers engaged in production undertaken entirely for their own final consumption or own capital formation, either individually or collectively. An example of this is communal construction.

16.28 Contributing family workers are sometimes called unpaid workers but there are other forms of unpaid, or voluntary, workers. If family members contribute to the output of an unincorporated enterprise, the estimate

of mixed income is assumed to include an element of compensation for them and thus they are all treated as being in the economically active population from the point of view applied in the integrated framework of the SNA.

3. Boundary problems

Non-observed economy

16.29 National accountants are particularly concerned about ensuring that the whole of economic activity within the production boundary of the integrated framework of the SNA is measured comprehensively. This is often referred to as the "exhaustiveness" of the coverage of the national accounts. In practice, it means ensuring that the value of production activities that are illegal or hidden (that is, the "underground economy" or the "hidden economy") as well as those that are simply described as informal is included in the accounts. Further details on the delineation of these activities are provided in chapter 7 on Production account and chapter 39 on Informal economy.

16.30 The various parts of the non-observed economy are linked and they are not mutually exclusive. The delineation with observed activities may also be slightly blurred. The value of output and the corresponding labour used, either in hours worked or full-time equivalents (see paragraphs 16.71 ff), will vary across the different non-observed economy domains; they will also change over time, in particular through periods of economic recession. Persons may also be involved in more than one domain. Whatever the case, in principle, for the integrated framework of the SNA, the labour used in these activities as well as the compensation of all these workers (either remuneration of employees or mixed income) should be included to compile exhaustive estimates. Therefore, when looking at comparisons between labour statistics and output, it is important to ensure that the persons providing labour inputs to non-observed activities are included in labour statistics.

Labour in NPISHs

16.31 The output of NPISHs is supplied free or at prices that are not economically significant, so it is valued by the costs of production including a mark-up for the services provided by capital used in production. One of these costs is remuneration of employees. It is important that these employees be recorded in the labour input measures used in deriving productivity changes. However, NPISHs often have volunteer workers so the treatment of these deserves special attention.

Volunteer labour

16.32 A distinction can be made between those who have an agreement to provide labour for token remuneration or only income in kind, those for whom there is explicitly no remuneration and those where there is apparently no remuneration but the workers benefit directly from the output to which they contribute.

16.33 In the integrated framework of the SNA, the remuneration of those working for token amounts or only income in kind is measured by these costs. No imputation for an additional element of remuneration is included. For example, if doctors or teachers work for only food and lodging, the value of this as income in kind is the only salary imputed to them. Such instances may arise in religious institutions or in the wake of natural disasters. If the unit employing these staff is responsible for whatever little remuneration is received, the staff are classified as employees.

16.34 If staff are purely voluntary, with no remuneration at all, not even in kind, but working within a recognised institutional unit, then these individuals are still regarded as providing labour input in the integrated framework of the SNA but there is no entry for remuneration of employees (or mixed income). Individuals providing services to groups of other individuals, such as coaching a children's football team, without any associated infrastructure are not regarded as providing labour input but rather engaging in a leisure pursuit.

16.35 By convention, no labour services are attributed to the housing services provided by owner-occupied dwellings (see paragraphs 32.55 to 32.63). In contrast, if a group of individuals agrees to construct a building

or structure, for example a school or a well, these individuals are regarded as providing labour input and receive mixed income for their efforts. Due to the difficulty in valuing such projects, unless a direct comparison can be made with a similar building, the value of construction should be based on the sum of costs incurred including a mark-up for the services provided by capital used in the production. Labour is a significant input into construction projects, so its value must be included as part of the total costs using wage rates paid for similar kinds of work on local labour markets (see paragraphs 7.139 and 8.30). This income is then used to value the result of their efforts which may subsequently be handed over to a third party for maintenance. The latter action is recorded as a capital transfer in kind.

16.36 As defined in the *ICLS Resolutions*, the main criteria for defining volunteer work are that it is unpaid, non-compulsory in nature and the intended destination of the goods and services produced for others outside the volunteer's household or family. Here, unpaid implies they do not receive a remuneration in cash or in kind for the work done or hours worked. They may receive some small form of support or stipend in cash or in kind usually meant to enable their participation. In the *ICLS Resolutions*, these volunteers are not treated as being in employment and thus not considered as employees.

4. Links between the SNA and the *ICLS Resolutions*

16.37 In the above, the most important elements of labour input in the integrated framework of national accounts have been covered. Some important differences with the *ICLS Resolutions* have also been mentioned. This sub-section covers the concepts and definitions of the *ICLS Resolutions* as well as the main differences with the concepts applied in the integrated framework of the SNA.

16.38 The *ICLS Resolutions* provides a broad overarching definition of work, comprising five different forms of work, as shown in figure 16.2:

a. employment;

b. own-use production work comprising production of goods and services for own final use;

c. volunteer work comprising non-compulsory work performed for others without pay;

d. unpaid trainee work comprising of work performed for others without pay to acquire workplace experience or skills; and

e. Other work activities (not explicitly shown in figure 16.2).

16.39 Each of these forms of work are discussed in slightly more detail below, including the main similarities and differences with the integrated framework of the SNA. As described in paragraph 16.8 above the forms of work from the *19th ICLS framework* can be combined to align to either the general production boundary or the production boundary applied in the integrated framework of the SNA. The key difference between these two boundaries is that direct volunteer work providing services and the production of services by households for own final use are within the general production boundary, but that these services and related labour input are outside the production boundary of the integrated framework of the SNA (with the exception of owner-occupied housing services and the production of domestic and personal services by employing paid domestic staff).

Employment

16.40 As defined in the *ICLS Resolutions*, employment relates to work for pay or profit. As such, it is a narrower concept than the concept of labour input applied in the integrated framework of national accounts. Households producing goods for own final use or for delivery to other households are excluded, as well as "volunteer work carried out through/for a non-household economic unit" (i.e., "organisation based volunteer work") and "unpaid trainees".

16.41 Moreover, while in the integrated framework of the SNA the distinction between employees and self-employed persons is highly relevant in view of the different types of compensation (remuneration of employees versus mixed income for self-employed persons), the term self-employed is not used in the *ICLS Resolutions*. Instead, the concept of independent worker is used within the *International Classification of*

Status in Employment (ICSE-18) as adopted at the 20th ICLS, whereby dependent contractors and contributing family workers are included as distinct types of work relationships in the broader group of dependent workers. Employers and independent workers without employees are classified as independent workers. In addition, allowance is made for detailed categories based on their exposure to economic risk, thus creating a distinction between:

- workers in employment for profit, which includes dependent contractors, independent workers in household market enterprises, and contributing family workers; and
- workers in employment for pay, which includes employees and the owner-operators of corporations.

16.42 More generally, those in employment might also provide additional labour input by carrying out forms of work other than employment. For example, an employed person may also provide, on a voluntary basis, caring activities for the elderly in the same period. The *ICLS Resolutions* promote the measurement and reporting of participation in all forms of work alongside indicators of labour force status.

Production for own final use

16.43 As defined in the *ICLS Resolutions*, the production for own final use relates to the production of goods as well as the production of services. The production of goods for own final use (e.g., food produce, self-build dwellings, etc.) is captured within the production boundary applied in the integrated framework of national accounts and the numbers of persons involved would be included in the national accounts as labour input, whereas the production of services for own final use (e.g., childcare, meal preparation, cleaning, etc.) is excluded from the production boundary of the integrated framework. The latter should be captured in an extended account on unpaid household service work, see chapter 34 on Measuring well-being for more details.

16.44 In the integrated framework of the SNA, the labour input related to household's production of goods for own final use is always recorded as part of labour input. Within the *ICLS Resolutions*, a distinction is made between the intended use of the goods produced by households. More specifically, if the goods are mainly intended for the final consumption of the producer or their household/family, it is classified as own-use production of goods, whereas in the case the production is mainly intended for sale, it is classified as part of employment.

Volunteer work

16.45 Two types of volunteer work are distinguished in the *ICLS Resolutions*:

- Direct volunteer work; this is work carried out directly by a household to help other people or another household directly (e.g., a neighbour); and
- Organisation-based volunteer work; this is done through or for an organisation, community or group.

The distinction between the two types is that the work is done for different types of economic units with different types of dependency.

16.46 As explained in the above, the treatment of volunteer work in the integrated framework of the SNA differs from the treatment in the *ICLS Resolutions*, as shown in figure 16.2. In the integrated framework of the SNA, the following distinction can be made:

- If the volunteer work relates to a contribution to the production of an institutional unit, then the person is considered an employee and any income in kind or other support received is recorded as remuneration of employees.
- If the volunteer work concerns direct volunteering resulting in production of goods, then the person is considered to be self-employed and any income in kind or other support received is recorded as mixed income.
- If the volunteer work concerns direct volunteering resulting in provision of services, for which the

third-party criterion is applicable, the relevant labour input would fall outside the production boundary applied in the integrated framework of national accounts, and would not qualify as part of labour input.

Unpaid trainee work

16.47 Unpaid trainee work refers to work performed for others without pay to acquire workplace experience or skills. It may also represent a traditional arrangement for gaining specific occupational skills in each trade or profession. In all instances, this form of work contributes to the production of goods and services and these trainees are treated as employees within the integrated framework of the SNA, while the *ICLS Resolutions* identify it as a form of work for separate measurement.

16.48 In contrast to paid apprenticeships, traineeships and other such programmes which constitute a type of employment contract, unpaid trainee work is carried out without pay in cash or in kind for work done or hours worked. Nevertheless, unpaid trainees may receive some form of support, such as transfers of education stipends or grants, or occasional in cash or in kind support (e.g., a meal, drinks). In the integrated framework of the SNA, this is recorded as remuneration of employees.

Other work activities

16.49 For completeness, other work activities include unpaid compulsory work performed for others such as community service and unpaid work by prisoners, when ordered by a court or similar authority, and unpaid military or alternative civilian service, which may be treated as a distinct form of work for measurement (such as compulsory work performed without pay for others). Persons involved in these activities are excluded from labour input in the integrated framework of the SNA unless the work is performed under instruction by or through an organisation in the same way people perform organisation-based volunteer work.

Figure 16.2: Links between the integrated framework of the SNA and the *19th and 20th ICLS resolutions*

Integrated framework of the SNA			Type of worker	*19th ICLS Resolution I*	*20th ICLS Resolution I*
				Form of work	**Category**
Outside the production boundary			*Households providing (unpaid) services to other households*	**Volunteer work**	Direct volunteers
			Output for own final use - services	**Own-use production work**	Workers in own-use provision of services
Production boundary	**Labour input**	**Self-employed**	*Output for own final use - goods*		Workers in own-use production of goods
			Households providing goods (without compensation) to other households	**Volunteer work**	Direct volunteers
			*Contributing family workers**	**Employment**	Contributing family workers
			Owners of household market enterprises		Independent workers in employment for profit
					Dependent contractors
			*Owners of quasi-corporations***		Independent workers in employment for profit
		Employees	*Owners of quasi-corporations***		Dependent contractors
			Owners of corporations		Independent workers in employment for pay
			Persons with an agreement of employment		Employees
			*Contributing family workers**		Contributing family workers
			Volunteer work carried out through / for a non-household economic unit	**Volunteer work**	Organisation based volunteer work
			Unpaid trainees	**Unpaid trainee work**	Unpaid trainee workers
			Unpaid work by prisoners, unpaid military or civilian service etc.	**Other work activities**	Other unpaid workers

Notes: The figure shows the differences in the overlapping population between the integrated framework of the SNA and the 19th ICLS Resolution I. In addition, there will be differences across the categories whereby the 2025 SNA excludes resident employees being employed by non-resident enterprises and includes non-resident employees being employed by resident enterprises.
* Contributing family workers may be regarded as self-employed or employees in the integrated framework of the SNA depending on the type of remuneration of the owner(s) of the family business. In the 20th ICLS resolution, all contributing family workers are defined as workers in employment for profit within the detailed ICSE-18 category of contributing family workers.
** Owners of quasi-corporations may be regarded as self-employed or employees in the integrated framework of the SNA depending on their type of remuneration. In the 20th ICLS resolution, all owners of quasi-corporations are defined as workers in employment for profit and may, depending on the characteristics of their work relationship, be defined as either independent workers in employment for profit or dependent contractors.

D. Labour market tables framework and the links with supply and use tables

1. Introduction

16.50 There is a range of comprehensive labour market statistics produced by national statistical institutions to meet different user needs. However, the varying statistical outputs may differ in source, scope, coverage and methodology. This can make comparisons and consolidation of the various datasets challenging. Different estimates may be available from a range of different sources, each with their own strengths and weaknesses; for example, household-based surveys often feed into the labour market data and business surveys feed into supply and use tables, thus the need for reconciliation.

16.51 The linking of supply and use tables with a labour market tables framework can help to integrate and confront numerous labour market statistics, and provide time series estimates of labour input such as persons employed, jobs, hours worked and income earned for each industry in relation to the corresponding output produced into one coherent framework. The integration of this information can also provide a quality assurance feedback loop to the quality of the estimates of value added and output in the supply and use tables. Doing this at the time of compiling and balancing of supply and use tables will in turn improve the coherence and exhaustiveness of GDP/NDP, and its underlying components.

16.52 The supply and use tables provide a lot of detail on the supply and use of goods and services by product. They also contain detailed information by industry on the production process, by describing the inputs used to produce the goods and services: intermediate consumption by product, labour input, return to capital (operating surplus), and in the case of self-employed, mixed income. More information on supply and use tables is provided in chapter 15.

16.53 While the information on the inputs of intermediate goods and services used in production is usually quite detailed, the labour related information within the body of the use table only covers aggregate information on the remuneration of employees and mixed income, the latter being – as mentioned before – a mix of remuneration for labour input and return to capital, broken down by industry. For many kinds of analyses, there is a need to have much more detailed information on the volume and the value of labour input, which is consistent and coherent with the other information in supply and use tables.

16.54 Collecting the detailed information from the same resident unit in the same business survey(s) covering the outputs, intermediate inputs, labour as well as capital used for the same time period(s) would be preferential for consistency, coherency and comparability at source. However, such an approach may not be possible for a variety of reasons, and one will have to rely on the utilisation and combination of various data sources such as labour force surveys, household and establishment surveys, administrative data sources, population surveys and Census data, etc., to arrive at the preferred detail. In doing so, special care and attention will need to be paid to possible differences between the concepts applied in the relevant source data and the concept of labour input for production activities according to the integrated framework of the SNA.

16.55 The labour market tables framework shows labour input through four dimensions: jobs, employed persons (both employees and self-employed), volumes (i.e., hours worked), and payments. The four quadrants of the framework identify specific relationships, which the aggregate statistics must satisfy, as shown in figure 16.3. Some relationships are direct, such as "employed persons in the total economy" being equal to "the number of main jobs", while other relationships are considered indirect or derived, in that the relationship is based on an average or ratio measure such as average hours worked per job or average income from labour per employed person.

16.56 The labour market tables can be extended by also including elements that go beyond the boundaries of the integrated framework of the SNA, such as hours spent on the production of household services for own final use, including estimates of their monetary value (see chapter 34 on Measuring well-being). An even more far-reaching objective in this respect would be the full integration of data on time use surveys, thus arriving at a comprehensive overview of all time spent consistent with hours spent on paid and unpaid work-related activities.

16.57 The remainder of this section discusses each of the four quadrants in the labour market tables framework in turn and figure 16.3 provides an illustration of the main content of these quadrants.

2. Jobs

16.58 ***Jobs (LAB4) are defined as contracts between employees and resident institutional units to provide labour in return for remuneration for a defined period or until further notice. The concept of jobs also applies to self-employed persons.*** More generally, a job is defined as a set of tasks and duties performed (or meant to be performed) by one person for a single institutional unit in relation to activities defined as labour input. Applying this definition in the context of the integrated framework of national accounts, remuneration should be interpreted in a wide sense, including remuneration for employees and part of mixed income for self-employed persons. Given the scope of labour input in the integrated framework of the SNA, any person who provides such labour input is considered to have a job.

16.59 Persons may have several jobs during a given reference period. The separation between multiple jobs carried out by the same person may cut across different types of work, different industries and different institutional units producing goods and services. In some cases, too, a single job may be shared by two persons. In addition, there is not always a one-to-one relationship between jobs and people because a job may be vacant. Therefore, the number of jobs in an economy will almost certainly be different to the number of employed persons.

16.60 The jobs quadrant also shows information on vacancies. An estimate of the total jobs available in an economy can be obtained by summing up the number of vacancies and the number of filled jobs. By its nature, vacancies usually refer to jobs that are available to be filled by employers in the formal sector. As such, the number of vacancies may not be fully aligned with the concept of labour input according to the SNA production boundary applied in the integrated framework of national accounts, which includes labour input beyond the formal sector.

16.61 Different estimates of jobs can be produced. These estimates may be based on administrative data sources, business survey sources and/or household survey sources (e.g., labour force survey). These would need to be reconciled, generating a single balanced estimate by industry. The quality and coverage of the relative sources would need to be reflected, for example, in terms of the aggregate jobs picture and jobs by industry. Estimates of the numbers of filled jobs sourced from businesses may be considered more reliable in estimating the distribution of jobs across industries. The numbers of filled jobs reported by each business survey respondent are generally classified according to the industry classification of that business. This implies that the labour input is more correctly linked to the related output and costs related to the input of labour. On the other hand, jobs data by industry collected in household surveys are generally less consistent and accurate, albeit more comprehensive, particularly in settings where the informal economy is large and establishment surveys do not cover the informal sector. Furthermore, in household surveys, people may be inaccurate in self-classifying the industry in which they work, for example, a security guard may work in a government office but employed and paid by an agency, their industry of employment being that of the agency and not the government body. Finally, statistics on vacancies would typically be collected from business surveys.

16.62 The jobs quadrant shows time-series estimates of total and filled jobs; filled jobs by industry; job vacancies; and main and secondary jobs. Other variations like market and non-market producers could also be considered.

3. Employed persons

16.63 The size of the ***labour force is a measure of the total number of resident persons who are actively prepared to make their labour available during any particular reference period for producing goods and services that are included within the production boundary applied in the integrated framework of the SNA.*** This is slightly different from the definition in the *ICLS Resolutions*, which restricts the labour force to persons who are willing and able to work for pay or profit. In this context, employed persons typically refer to persons resident in a country. However, the integrated framework of the SNA focuses on resident and non-resident persons providing labour input in the domestic economy. A link between the two concepts can be established by adding information on resident persons providing labour input to non-resident producer units to, and deducting non-resident persons providing labour input to resident producers from, the concept of employed persons applied in the integrated framework of the SNA, to provide a measure of the resident persons providing labour input.

16.64 A person who, in a certain reference period, spends more than one hour of labour input to the production of goods and services, as defined within the integrated framework of the SNA, should be counted as providing labour input. It should be possible to link their activities to one or multiple jobs. This is essential from a statistical perspective because such an approach allows the categorisation of persons to different types of jobs and the main characteristics of those jobs (e.g., working hours, industry, occupation, whether the job is seasonal, formal or informal, etc.). In other words, the job is a reference unit which facilitates the grouping of different forms of labour input by their characteristics and provides a meaningful description of the structure of labour input in a country.

16.65 Where a person has multiple jobs that fall into different categories of labour input, the person should be classified to the main job for which the worker usually works the most hours, and if this information is not available, then to the job from which they get most of the income.

16.66 The employed persons quadrant may include demographic breakdowns by sex or gender, age and educational attainment. Breaking the data by educational attainment would allow for an improved analysis of the quality of labour and would provide the starting point for deriving human capital estimates (see section F below). More generally, it is worth noting that the international comparability of estimates may be affected by legislative differences in working age, retirement age, etc. across countries. International child labour standards, for example, set the minimum age for light work at 13 years and general employment at 15 years, albeit differences exist across countries. Similarly, differences exist for the retirement age or the limit for the working age.

16.67 The employed persons quadrant also provides information on unemployed persons and underemployed persons. However, as noted before, unemployment relates to persons who are available for work and actively seeking work for pay or profit. Thus, for example, a person involved in the production of goods for own final use or a volunteer who receives no renumeration may be considered to be unemployed if they are available for work and actively seeking work for pay or profit, even though their labour input may be contributing to activities within the production boundary applied in the integrated framework of national accounts. It is important to consider these differences when reconciling statistics on unemployment and the persons providing labour input to production according to the integrated framework of the SNA, for example by making a distinction between labour input for pay or profit versus other categories of labour input, which may also be part of the population of unemployed persons.

16.68 Statistics on unemployment are typically obtained from labour force surveys. They may also be obtained from administrative sources on persons claiming unemployment benefits although care needs to be taken if the basis for receiving such benefits is different to the statistical concept of unemployment. The number of people claiming unemployment benefits can be used as a proxy but only reflects those claiming benefits. Underemployment refers to persons who are employed but who would like to, and are available to, work additional hours. Statistics on underemployment are normally obtained from labour force surveys.

Figure 16.3: Labour market tables framework

16.69 The employed persons quadrant shows time-series estimates of employed and unemployed persons; labour force (data on resident persons employed by non-resident producer units are included, and data on non-resident persons employed by resident producer units are excluded); main job-holding; multiple job-holding and underemployed.

4. Volume

16.70 The volume part of the tables reflects the information on the volume of labour input, as typically measured using hours worked.

16.71 The volume quadrant describes the relationship between the hours of labour that are supplied by persons and the hours of labour that are used by enterprises. ***Hours worked (LAB1) are defined as the number of hours actually worked as an employee or self-employed person, to produce output recorded within the production boundary applied in the integrated framework of the SNA***. It quantifies the number of hours actually worked by persons in all jobs. Total hours (actually) worked is the preferred measure to be used in productivity estimates as this is the best, and closest, measure that relates to the labour time used as the input to produce the output measured, both by industry and the whole economy.

16.72 Measuring changes in the level of hours worked for different groups of employed persons (both employees and self-employed) is also important in order to monitor working and living conditions as well as analysing economic cycles. Information on hours worked enables various analytical insights such as: classification of employed persons into full-time and part-time status; the identification of under-employed persons; and the creation of high frequency (monthly or quarterly) aggregates on hours worked.

16.73 In practice, total hours actually worked and annual hours actually worked in full-time jobs may have to be estimated but substantial data on labour and output can be gathered from the same businesses to ensure consistency with the labour input to produce the output. In many countries, especially for monthly paid employee jobs, only normal hours or hours usually worked, any paid overtime, plus annual and holiday leave entitlements can be ascertained. An adjustment should be made to the total hours actually worked or annual (full-time) hours actually worked to account for the average level of absence from work due to illness. This difference will not affect full-time equivalent employment, as discussed further below, if sickness rates in part-time jobs are the same as in full-time jobs. However, if they are not, adjustments should be considered.

16.74 If the reference weeks used in the surveys have gaps in time coverage, as a consequence of which a complete period, say a year, is not fully covered, then the best available information (even indicative data) suitable for filling the gaps should be used to ensure any seasonal variations are incorporated to generate an estimate for the complete period.

16.75 For the purposes of the integrated framework of the SNA, working time is defined as the time spent in undertaking activities that contribute to the production of goods and services within the production boundary applied in the integrated framework of national accounts. Seven concepts of working time are defined in the *ICLS Resolutions*:

a. hours actually worked;

b. hours paid for;

c. normal hours of work;

d. contractual hours of work;

e. hours usually worked;

f. overtime hours of work; and

g. absence from work hours.

16.76 The concept of hours actually worked in the integrated framework of the SNA covers:

a. direct hours, the time spent carrying out the tasks and duties of a job in any location regardless of the amount of time agreed contractually between employer and employee;

b. related hours, including time on call, travelling on work assignments, training and other tasks itemised in the resolution;

c. down time, covering periods when a person is available for work but cannot because of temporary interruptions of a technical, material or economic nature; and

d. resting time such as short periods of rest, for refreshment, etc.

16.77 However, hours worked exclude:

a. all types of leave (annual, public holidays, sick leave, parental leave, civic duty, etc.);

b. commuting time when no productive work is done;

c. separate educational time other than training; and

d. meal breaks and other longer periods of rest while travelling on business.

16.78 More exhaustive definitions of these criteria can be found in the relevant *ICLS Resolutions*.

16.79 For employee jobs, the calculation of hours worked being equal to hours paid less hours paid but not worked, plus hours worked but not paid, is a useful one, since many establishment surveys record hours paid, not hours worked, so that hours worked must be estimated for each job group, using whatever information is available about paid leave, etc.

16.80 For self-employed persons, a labour force survey covering all industries may be a source of information for the estimation of hours worked. The respondents whose main job is self-employed are asked about the hours they usually work and the hours they actually worked in the reference week. Those respondents who have a second job that is self-employed are also asked how many hours they worked in that job during the reference week. In the absence of a labour force survey, census information may contain relevant information that could be used as a benchmark, with the benchmarks extrapolated and interpolated using a suitable indicator (e.g., the estimated share of mixed income that goes to labour deflated by a labour price index).

16.81 In compiling the volume quadrant, adjustments will have to be made to reconcile the various data sources on hours worked. Further reconciliation adjustments to the relevant estimates may also need to be made on the basis of confrontation with data from other quadrants of the labour market tables framework.

16.82 The volume quadrant shows time-series estimates of total hours actually worked (as well as hours worked per job or per employed person); hours paid for (ordinary time and overtime); hours not worked; and hours sought but not worked.

5. Payments

16.83 The payments quadrant accounts for the remuneration of employees as well as other costs less subsidies and other allowances, incurred by enterprises in employing this labour input. It also accounts for the (imputed) income from self-employment. It can be described as the total cost of labour and reflects the interactions between labour supply (persons in the resident labour force), labour demand (jobs and employed persons) and labour volume (hours worked). There are three key variables: (a) total labour costs; (b) labour costs of employees; and (c) imputed remuneration for self-employed.

16.84 The measure of total labour costs is based on the concept of labour as a cost to employers and includes wages and salaries, employers' social contributions and all other general employee costs borne by the employers, such as training costs, use of recruitment services, taxes on payroll or workforce and so on. These other costs would not include the costs which are already accounted for as remuneration of employees, as this would lead to a double counting. Any government subsidies, rebates or allowances for wage and salary payments should be deducted from employers' labour costs. It should be noted that part of the other labour costs paid by the employer are recorded as intermediate consumption, while other elements may be recorded as other taxes, less subsidies, on production. Caution is thus needed when interpreting the results as not all labour costs align to value added. For this reason, it is also recommended to keep separate track of both remuneration of employees and other costs less subsides and other allowances.

16.85 For some analytical purposes, it may be useful to estimate a breakdown of mixed income earned by self-

employed persons into a remuneration for labour input and gross operating surplus. This would not only enable the estimation of a more accurate return to labour and return to capital, it would also enable "cleaner" comparisons of compensation for labour and gross operating surplus over time and across countries, as it would adjust for differences in the composition of the employees and self-employed.

16.86 There are different ways to achieve the separation of mixed income between the remuneration of capital and the remuneration of labour. Taking the agriculture industry as an example, one may start with estimating the remuneration for the labour input of self-employed persons (including family members) working on the farm(s), after which the return to capital can be calculated as the difference between total mixed income for the agriculture industry and this estimate for labour compensation. The imputed compensation for the labour input of self-employed persons could be based on the hours worked by these persons and the average remuneration per hour worked for employees employed by incorporated businesses in similar activities.

16.87 Alternatively, one may estimate the return to capital and derive the return on labour as a residual. Using estimates of the stock of capital used by the unincorporated enterprises and average rates of return to capital in similar incorporated businesses would establish a return to capital, and deducting this estimate from mixed income would generate a rate of return to labour.

16.88 The first method is conceptually preferable and from a practical point of view probably more feasible. However, it should be noted that the residual operating surplus could become negative. Whether this is plausible and realistic or a reflection of the estimation method may require further investigation. For industries such as agriculture, the levels of mixed income may be very volatile, with one year of low, or even negative, levels of mixed income followed by a year with very high levels of mixed income. It seems more reasonable to reflect this volatility in the resulting operating surplus.

16.89 Like the persons quadrant, remuneration of employees and (imputed) labour income for self-employed could also be provided by age, sex or gender and educational attainment. Some of these may be derived from surveys and other sources, or they may require some methods of apportionment and disaggregation.

16.90 The payments quadrant shows time-series estimates of total labour income (per person and per hour); total labour costs (per job and per hour); remuneration of employees; other costs less subsidies and other allowances to employers; and (imputed) labour income of self-employed persons.

E. Other enhanced measures of labour inputs

16.91 This section covers some additional labour market measures. These labour input measures can be adjusted to provide various degrees of sophistication and quality, to cover for example, full-time equivalents and quality-adjusted labour inputs for use in productivity measurement and other analyses. More details on the measurement of (labour) productivity can be found in chapter 18 on Measuring prices, volumes and productivity.

1. Labour input measured on a full-time equivalent basis

16.92 ***Full-time equivalent labour input (LAB2) is the number of full-time equivalent jobs, defined as total hours actually worked by all employed persons divided by the average number of hours actually worked in full-time jobs.***

16.93 The definition of full-time equivalent labour input does not necessarily describe how the concept is estimated. Since the length of a full-time job has changed through time and differs between industries, lower quality crude estimation methods should be avoided and more sophisticated ones are to be preferred, such as one that establishes the average proportion and average working time of less than full week, full-time jobs in each job group separately.

16.94 The integrated framework of the SNA does not recommend full-time equivalent labour input as the preferred measure of labour inputs but actual hours worked. However, if the data are good enough to permit an estimation of total hours actually worked, full-time equivalent labour input should also be estimated and published. One reason is that this facilitates international comparisons with countries which can only estimate

full-time equivalent labour input. Since total hours actually worked is the preferred measure of total labour input, the use of full-time equivalents is likely to be gradually phased out.

2. Quality-adjusted labour input

16.95 Using total hours actually worked as the input measure for calculating (labour) productivity changes over time implicitly assumes that each hour worked is of the same quality (that is, there are no differences in the qualifications and skill levels of the labour employed). In other words, each hour worked by a highly skilled person, such as a brain surgeon, is assumed to produce the same quantity and quality of output as each hour worked by an unskilled worker. It is possible to produce a quality-adjusted measure of the labour inputs that takes account of changes in the mix of workers over time by weighting together indicators of quality for different grades of workers. (The term quality-adjusted is used as being parallel to the idea of quality-adjusted price indices but it could also be seen as an adjustment for the change in the composition of the workers involved.)

16.96 The quality indicators used can relate to variables such as academic qualifications, trade qualifications, experience (typically based on the worker's age), industry of employment and so on. The various populations are weighted together using average hourly wages for a worker falling into each category. The premise behind this approach is that workers are hired only until their marginal price (that is, their wages, including on-costs) is less than the marginal revenue expected to result from their production. The index formula used can be a fixed-weight (Laspeyres) formula or a more sophisticated formula such as the Törnqvist index, which takes account of changing weights by using weights from each of the periods in the analysis.

16.97 Calculating a quality-adjusted labour input measure using this approach may seem to be very data intensive but does not require more detailed data than that needed for the labour market tables framework, as the latter framework would typically include relevant breakdowns, such as the one by level of education.

3. Labour input in volume terms

16.98 Total hours actually worked and full-time equivalent labour input are both physical measures of labour input. Output too can usually be measured in physical terms such as tonnes or cubic metres. However, this is not done in the national accounts because the basic value per tonne or cubic metre varies so much between products that these physical measures lack general economic significance. Also, the remuneration per hour or per full-time year of work varies enormously. Physical measures of labour input are only valid if the mix of different kinds of labour is much the same in the different countries or at the different times examined.

16.99 Since output is measured both at current prices and in volume terms using constant prices, it is natural to do the same with labour inputs using constant renumeration, as well as with intermediate inputs using constant prices. If, as recommended for the compilation of labour market tables, data on the (imputed) income for the labour input of self-employed persons are available, compensation for all labour input at constant remuneration could be estimated. If this is not the case, the labour input of employees only can be shown at constant remuneration. Whatever the case, both measures have their relevance for analysis.

16.100 The measurement of labour inputs at current prices and in volume terms is symmetrical with the measurement of output and subject to the following caveats:

a. Market prices and market compensation are assumed to measure the relative economic importance of different goods, services and jobs. The advantages and disadvantages of this assumption are the same for inputs as for outputs.

b. Although the volume measure and constant remuneration concepts are defined as revaluations of quantities at base period prices or remuneration levels, they can be estimated in practice as the sum, over all groups, of values at current prices or remuneration levels, each divided by an appropriate wage index.

c. These group indices are estimates, calculated for a representative sample of jobs or of goods or services, with weights reflecting the relative importance of each of the sub-groups represented by a

selected and specified job, or by a selected and specified good or service. In other words, a remuneration index is constructed like a price index.

16.101 While the value of (employee) labour input in volume terms can be estimated by deflating current values, as mentioned above, the data may also permit the direct approach of multiplying the current number of jobs in each job group by the base-period average annual remuneration for jobs in that job group.

F. Specific issues

1. Links to the Standard Occupational Classification

16.102 The occupation refers to the type of work done in the main job by the person employed irrespective of the industry in which the person's job is classified or the status in employment. Given the diverse nature of work done in the various economic activities, it is also recommended to have breakdowns by occupational group according to the *International Standard Classification of Occupations (ISCO)* for labour input by industry.

16.103 Data by occupation also create the building-blocks necessary to provide information on occupational demands. It also allows to assist areas of the country that have clusters of low-paid skills which, in turn, could help to target policy interventions.

16.104 Data on labour input with details on occupations are also important inputs to determining the value of the labour input in estimating the own-account production of various intangible assets such as R&D, computer software and data.

2. Paid and unpaid household services, and production for own final use

16.105 In contrast to the production boundary applied in the integrated framework of the SNA and used for calculations of GDP/NDP, the general production boundary also includes own account production of unpaid services for own final use by households (e.g., childcare, meal preparation, cleaning, etc.). Including them in complementary measures to GDP/NDP and providing the number of hours worked on unpaid household service work would complement the standard national accounts' measures with more inclusive measures of economic activity, material well-being and the labour inputs required.

16.106 The third-party criterion used when defining the scope of activities to be covered is broadly defined as unpaid work performed within the household sector which could be contracted out to a market service provider under regular conditions. This corresponds to the concepts of “output for own final use – services” and “households providing (unpaid) services to other households” in the *ICLS Resolutions*; see figure 16.2.

16.107 More details on extended accounts on unpaid household service work can be found in chapter 34 on Measuring well-being.

3. Education, training and human capital

16.108 From a measurement perspective, well-being encompasses data about several elements, including health, education, income, labour, care, consumption and leisure, that collectively support assessment of the progress of people and communities and the extent to which the needs of current generations are satisfied.

16.109 The idea of viewing human knowledge and abilities as an asset – as human capital – and to estimate its value is not new, but has gained prominence in recent years, especially in the context of measuring sustainable development. Policymakers are calling for ways to understand and quantify human capital, in order to better understand what drives economic growth and the functioning of labour markets, to assess the long-term sustainability of a country’s development path, and to measure the output and productivity performance of the education sector. The core connections and dependencies between human capital, education, labour and production are depicted in the figure 34.2.

16.110 From an SNA perspective, there has been a long-standing discussion on the potential to capitalise education and training expenditures within the integrated framework of national accounts and recognise human capital

as an economic asset on the balance sheet. Thus, although human capital has not been included in the integrated framework of national accounts for the reasons mentioned in paragraphs 1.76 and 1.77, the discussion is of high relevance for extending and broadening the integrated framework of national accounts. This has been done by way of recommending the compilation of extended accounts on human capital, education and training. These extended accounts are further elaborated in chapter 34 on Measuring well-being and chapter 35 on Measuring the sustainability of well-being.

16.111 The labour market tables provide important elements for monitoring human capital, education and training. Especially the breakdowns of labour input by educational attainment are relevant in this respect. They do not only show the impact of education and training on the labour market but also account for the developments in the demand for different types of labour. In addition, the data on remuneration of labour input by educational attainment would provide important building blocks for the measurement of human capital using an income-based approach, in which human capital is approximated by the present value of future economic benefits from education in the form of remuneration of employees.

Chapter 17: Capital services

A. Introduction

17.1 This chapter shows how a link can be made between the value of assets used in production and the gross operating surplus generated. This link has been elaborated in a body of knowledge described as the theory of capital services. Capital services show the contribution of capital to production. The integrated framework for national accounts includes a standard table showing the implicit capital services provided by non-financial assets. This table provides information that can be used, along with the contribution of labour input discussed in chapter 16 on Labour, in the analysis of productivity, which is discussed in section F of chapter 18 on Measuring prices, volumes and productivity. Also, compiling estimates of capital services using the approach described in this chapter leads to improved measures of capital stock in the balance sheet.

17.2 The rest of the introduction gives a very general overview of the ideas involved in linking capital services within the integrated framework of national accounts. Section B shows how the measurement of capital stock can be aligned with the notion of the efficiency of an asset as well as its price. This is followed by section C showing how to identify flows of capital services within existing entries in the accounts. Section D shows how consideration of the basic link between asset value and contribution to operating surplus can be exploited to determine the appropriate way to account for costs associated with acquiring and disposing of assets and to place a value on assets where limited information on current exchange prices is available. Finally, section E summarizes the fundamental methods of capital measurement and discusses a table on capital services.

1. The basic ideas of capital services

17.3 Non-financial assets give rise to economic benefits either from being used in production or simply from being held over a period of time. This chapter concerns those non-financial assets that contribute to production and how this contribution is recorded in the accounts and tables. The assets concerned are any produced non-financial assets (excluding natural resources), non-produced non-financial assets (excluding natural resources), or natural resources which are used in an on-going basis on production. Valuables give rise to economic benefits derived from holding them as stores of value rather than using them and so are not covered by this chapter.

17.4 Assets appear on the balance sheet of their economic owner and the changes in value between one balance sheet and the next have to be identified and included in the appropriate account. Changes in the value of assets due to changes in absolute or relative prices appear in the revaluation account. Changes due to unexpected events not reflected in transactions appear in the other changes in the volume of assets and liabilities account. Every other change in value is treated as a transaction and must be recorded elsewhere in the integrated framework of the SNA. If the user of the asset is not the legal owner, two sets of transactions are recorded, those giving rise to payments between the user and the legal owner and those that show the user receiving the economic benefits of using the asset. These latter are recorded as internal to the user. If the legal owner of the asset is also the user of the asset, only the internal transactions are recorded.

17.5 Assets used in production have to be paid for but the payment is not deducted from the value of production in the period the asset is acquired but is spread over the whole of the period the asset is in use in production. For fixed assets, this gradual payment for an asset is recorded as depreciation, which is the decline in the value of the asset due to its use in production. However, assets are not just a charge on production, they also contribute to the profitability of an enterprise by being the source of operating surplus. It has long been commonplace to recognize that operating surplus is the return to capital used in production. Capital services provide an articulation of how this surplus is generated and how it relates to the value of an asset and the way in which this value changes during a period. (However, capital services are not the outputs of production in the way that transportation or education services, for example, are.) Capital services can be thought as the way in which the changes in the value of assets used in production are captured in the production account and the balance sheet.

17.6 This chapter shows how capital services can be identified within the accounts and tables of the integrated

framework of the SNA. This can lead to improvements in the estimates of depreciation, which are currently required in the production account, and of the values of capital stocks, which are required in the balance sheets. Capital services are also important for productivity measurement, so the derivation of information for productivity studies can thus be seen as a component of national accounts compilation practices and not an additional exercise. The explanation in this chapter is done in terms of highly simplified numerical examples but still aims to demonstrate the connection between capital services and the national accounts approach to the valuation of capital and the derivation of stock levels.

17.7 The explanation given here is to some extent superficial since it is intended to give an overview of the concepts and demonstrate why capital services are relevant to the national accounts. For a deeper understanding of the subject, reference should be made to the two OECD manuals on the subject, the *OECD Manual on Measuring Capital, 2nd edition* and the *OECD Manual on Measuring Productivity*, including some of the practical and theoretical work referenced in those manuals.

B. Valuing capital stock of fixed assets

17.8 Estimating the value of capital stock of fixed assets is often not a straightforward process. Whereas it is possible to measure all new capital formation undertaken in a year directly and simply aggregate it, estimating the total value of a stock of assets, even of the same basic type, but with differing characteristics and of different ages, is not simple. In theory, if there were perfect second-hand markets for assets of every specification, these observed prices could be used to revalue each asset at the prices prevailing in a given year, but in practice, this sort of information is very seldom available. Even if information from a second-hand market is available, there are a number of potential problems with using it to revalue other assets: the market may be extremely thin, so that the assets offered for sale on second-hand markets may be unrepresentative of the assets that are not offered for re-sale; and the prices for second-hand assets may be close to their scrap value, thus not providing a good representation of the capital services that can be derived from them in the remainder of the service life. See the discussion of prices from second-hand markets in paragraphs 4.154 to 4.156 and the annex to chapter 4 on Flows, stocks and accounting rules. Thus measures of capital stocks of fixed assets must be derived indirectly and this is conventionally done by making assumptions about how the price of an asset declines over time and incorporating this in a model based on the perpetual inventory model (PIM). Basically the PIM writes down the value of all assets existing at the beginning of the year in question by the reduction in their value during the year, eliminates those assets that reach the end of their useful lives in the year and adds the written-down value of assets acquired during the year. This routine is so well established that it is possible to overlook the assumptions it rests on but it is an investigation of these assumptions that reveals the dual benefits of deriving capital service values.

17.9 In the absence of observable prices, the value of an asset may be determined by the present value of its future economic benefits. Economic theory states that in a well functioning market (suitably defined) even when prices are observable, this identity will hold also. There are thus two sorts of questions that may be posed about the value of an asset; (i) how much would it fetch if sold, and (ii) how much will it contribute to production over its useful life. The first of these is the traditional question asked by national accountants; the second is basic to studies of productivity. However, these two questions are not independent.

1. Knowing the contribution to production

17.10 Suppose an asset will add values of 100, 80, 60, 40 and 20 to production over the next five years. For simplicity assume all products have the same prices and there is no inflation. Assume, further, that the real rate of interest is five per cent per annum for all five years.

17.11 The value of the asset in all five years can be derived using present value techniques as shown in table 17.1. (For simplicity, in this and all the following examples, the values shown are values at the start of the year so that, when discounting, the factor for the whole year is used. This simplification is made only to facilitate exposition; in practice mid-year figures should be used. It should also be noted that the figures in the tables are rounded and therefore may appear not to add exactly. However, a reader who follows the examples in a spreadsheet will achieve exactly the figures shown.)

Table 17.1: Example of deriving the value of capital stock from knowledge of its contribution to production

Discount rate 5%

	Year 1	Year 2	Year 3	Year 4	Year 5	Sum of 5 years
Contribution to asset value from earnings in :						
Year 1	100					
Year 2	76	80				
Year 3	54	57	60			
Year 4	35	36	38	40		
Year 5	16	17	18	19	20	
Value in year	**282**	**191**	**116**	**59**	**20**	
Value index (year on year)	1.00	0.68	0.61	0.51	0.34	
Decline in value	**91**	**74**	**57**	**39**	**20**	**282**
Income	9	6	3	1	0	18

17.12 The addition to the value of the asset in year 1 from the expected earnings of 80 in year 2 is 76, that is 80 divided by 1.05. (Alternatively, the addition to the value of the asset in year 1 can be viewed as 80 times a discount factor of 0.9524, the reciprocal of 1.05.) The addition to the value of the asset in year 2 from earnings in year 3 is 57 (60 divided by 1.05) and in year 1 is 54 (57 divided by 1.05) and so on. When the value of 100 for the earnings in the first year is added to 76, the value of the second year's earnings in the first year, and to 54, the value of the third year's earnings in the first year and to 35 and 16, representing the value of the earnings in years 4 and 5 in the first year, a value of the asset in year 1 of 282 is derived. When the table is complete, the value of the asset in each of the five years is seen to be 282, 191, 116, 59 and 20.

17.13 The decline in value of the asset from year to year can be calculated by deducting each succeeding year's value from the value of the present year. Thus a series of 91, 74, 57, 39 and 20 is derived, a series that sums to 282, the original value of the asset. If the decline in value of the asset (91 in the first year) is deducted from the contribution to production (100 in the first year), the value of income generated in a year results (9 for the first year). To see that this item represents income, consider that the sum of the elements in the first column for years 2 to 5 together (182) represents the value of the same capital stock existing in year 2 but valued in the first year. This value of 182 increases by 9 to 191 between year 1 and year 2. This amount satisfies the criterion for income that it is the amount that the owner of the capital can spend and still be as well off at the end of the period as at the beginning.

17.14 Over the five-year period, the value of income is equal to the difference between the sum of the diagonal elements (300) less the amount of the decline in value (282), or to put it another way, there is an identity between the value of income the asset yields and the discounting inherent in establishing its current value.

2. Knowing the value at any time

17.15 Now suppose nothing is known about the contribution of the asset to production but the decline in the value of the asset over the five years, due to ageing, is known. If this is postulated in terms of a value index relative to the preceding year's value, and the initial value is known to be 282, then the entries in table 17.2 can be calculated. By design, a value series consistent with the figures in table 17.1 is assumed. Applying the decline in value of 0.68 to the initial value of 282 gives a value of 191 for year 2; applying the value decline of 0.61 to 191 gives 116 for year 3 and so on. (Alternatively a time series of values could be postulated and applied to the initial value.) From this the declines in value of the asset from year to year can be deduced and seen to

be identical with those in table 17.1.

Table 17.2: Example of deriving the value of capital stock from knowledge of its decline in price

Discount rate 5%

	Year 1	Year 2	Year 3	Year 4	Year 5	Sum of 5 years
Contribution to asset value from earnings in :						
Year 1	100					
Year 2	76	80				
Year 3	54	57	60			
Year 4	35	36	38	40		
Year 5	16	17	18	19	20	
Value in year	**282**	**191**	**116**	**59**	**20**	
Value index (year on year)	1.00	0.68	0.61	0.51	0.34	
Decline in value	**91**	**74**	**57**	**39**	**20**	**282**
Income	9	6	3	1	0	18

17.16 In general this is as far as the PIM goes. Its twofold purpose is to calculate asset values for the balance sheet and the figures for depreciation and these requirements are satisfied at this point. But it is in fact possible to go further. The contribution of the asset to production in the final year (20) is the same as the final year's value. If this is discounted by five per cent, the addition to the value of the asset at the start of year 4 is determined to be 19. Given the value of the asset at the start of year 4 is 59, there must be a figure of 40 contributed to the production in that year. Extending this, for year 3 the value of 116 must consist of 18 representing the contribution to production in year 5 of 20 discounted twice, 38 representing the value contributed to production in year 4 of 40 discounted once and so by residual the value contributed to production in year 3 must be 60. In this way all the top, triangular, part of the table can be completed and the values of the amounts of income in a year be derived just as in table 17.1.

3. Age-efficiency and age-price profiles

17.17 Although tables 17.1 and 17.2 start from different assumptions, exactly the same complete table results even though they are filled in a different order in the two cases. Table 17.1 starts from assumptions about the declining contribution to production and derives stock values and the decline in value each year. Table 17.2 starts from assumptions about the decline in value of the stock and derives the contribution to production and the decline in value each year. Both techniques give values of stocks to include in the balance sheets and figures of depreciation. The assumptions made in the two cases must be consistent. In fact it can be shown that every pattern of decline in the contribution of an asset to production (usually called the age-efficiency profile) corresponds to one and only one pattern of decline in prices (usually called the age-price profile).

17.18 Given this, it would seem possible to take the information in a set of PIM assumptions and simply derive the contributions to production from these. While it is possible to do this, it is generally held to be preferable to start again by postulating a set of age-efficiency profiles. The reason for this can be illustrated by table 17.3.

Table 17.3: Table 17.2 with a slightly different pattern of price decline

	Discount rate 5%					
	Year 1	Year 2	Year 3	Year 4	Year 5	Sum of 5 years
Contribution to asset value from earnings in :						
Year 1	80					
Year 2	96	101				
Year 3	75	79	83			
Year 4	24	26	27	28		
Year 5	6	6	6	7	7	
Value in year	**282**	**211**	**116**	**35**	**7**	
Value index (year on year)	1.00	0.75	0.55	0.30	0.20	
Decline in value	**70**	**95**	**81**	**28**	**7**	**282**
Income	10	6	2	0	0	18

17.19 Table 17.3 again starts from a series of relative price changes as in table 17.2 but these changes are somewhat different. Instead of a series of 1.00, 0.68, 0.61, 0.51 and 0.34, a series of 1.00, 0.75, 0.55, 0.30 and 0.20 is taken. These changes underestimate the rate of decline in value in the second year and assume a faster rate of decline in later years. At first sight they do not seem unreasonable. However, the effect on the contribution to production is considerable and the resulting series of 80, 101, 83, 28 and 7 is quite implausible. What sort of asset would be over twenty per cent more efficient in its second year than in its first and still more efficient in the third year than in the first before declining quickly thereafter? Yet this pattern of flows is still consistent with an initial value of 282, as in table 17.2 and with cumulative declines in value adding to this amount over five years.

17.20 These are the reasons why it is argued that making assumptions about efficiency decline is likely to lead to superior results for the value of stocks, their decline in value and the income they generate than making assumptions about the rate of price decline. As a further example of why this may also be easier, consider the case of an asset that contributes the same to production, let us say 100, for each of five years and then stops dead, like a light bulb. It is easy to postulate a constant age-efficiency profile but the corresponding age-price profile is much less intuitively obvious and varies according to the discount factor applied.

17.21 However, while there are good reasons for using age-efficiency profiles as the starting point, where actual information is available on age-price profiles, even partial information, it should be confirmed that the selected age-efficiency profile is consistent with the observed age-price movements.

4. The special case of geometrically declining profiles

17.22 A number of patterns can be postulated for either the age-price or age-efficiency profile. These include straight line depreciation and various non-linear forms discussed in the *OECD Manual on Measuring Capital, 2nd edition*. One of particular interest is that where the price declines geometrically, that is each year the price (when adjusted for inflation) is a fixed proportion, *f*, of the year before. Because such a series converges to, but never actually reaches, zero, it is difficult to portray it in a table such as those shown above but the interesting characteristic can be derived by means of a little very simple algebra. The SNA recommends that the geometric depreciation method be used as a default option; however, other depreciation profiles may be considered more suitable for certain types of assets; see paragraph 7.281. In particular countries who are able to estimate actual age-price/age-efficiency profiles for various fixed assets as well as mortality distributions are encouraged to use these.

17.23 It can be seen from the tables above that the value of an asset at the start of any year, V_t, is equal to the capital services to be rendered in that year, a_t, plus a discount factor, d, times the value of the asset at the start of the next year, V_{t+1}. Thus

$$V_t = a_t + d\, V_{t+1}.$$

In the case where $V_{t+1} = f\, V_t$, $V_t = a_t/(1-df)$.

By analogy, if the value of the capital services rendered by the asset in year t+1 is a_{t+1}, $V_{t+1} = a_{t+1}/(1-df)$. But since $V_{t+1} = f\, V_t$, it follows that a_{t+1} must be equal to $a_t f$. Thus, we have the case that the rate of decline in capital service, a_{t+1}/a_t, is equal to the rate of decline in the price of the asset, f. In other words, the shape of the age-price profile and the shape of the age-efficiency profile are exactly the same.

17.24 As noted above, there is one and only one age-price profile corresponding to one age-efficiency profile, so it follows that the geometrically declining profile is the only profile that is the same for both the decline in price and the decline in efficiency. One consequence is that figures for capital stock adjusted for the decline in value are equal to those for capital stock adjusted for the decline in efficiency. This property adds to the reasons that can be advanced for choosing this profile to determine the value of capital stock.

5. Practical considerations

17.25 As noted at the outset of this section, there are many simplifications built into the examples presented, made in order to facilitate the explanation of the basic theory behind the idea of capital services to those new to the idea. The *OECD Manual on Measuring Capital, 2nd edition* should be consulted for a more rigorous discussion and for considerations such as the rationale for choosing one age-price (or age-efficiency) profile rather than another, how to estimate life lengths and retirement patterns of assets and the role of expectations in the calculations.

17.26 The manual also discusses the fact that the return to capital must be sufficient to cover taxes levied on the asset in question, a point that is ignored here also in the name of simplification.

17.27 To be precise, a distinction is made between the interest or discount rate, r, usually assumed to be five per cent in this chapter, and the discount factor which is the reciprocal of $(1+r)$. When r is 5 percent, the discount factor is 95.24 per cent. When the discount factor is 95.0 per cent, the discount rate is 5.26 per cent.

C. Interpreting the flows

17.28 The tables above generate three time series of particular interest. One is the contribution to production of an asset over time, one is the decline in the value of the asset and one is the income generated by the asset. Obviously the middle term corresponds to depreciation as normally understood in the SNA. The contribution of capital to production is what is called gross operating surplus and so the third time series, income, corresponds fittingly to net operating surplus. However, these flows can be described by alternative names also. The diagonal element of the tables, showing the contribution to production, is also known as the value of capital services. The income element is the net return to capital. The rate of net return on capital is the ratio of income to the value of capital. For tables 17.1 and 17.2, the income flow as a proportion of the next year's capital stock value (that part not used in the current year) is also five per cent, the same as the discount rate. The alternative terminologies are illustrated in table 17.4.

Table 17.4: Capital services and SNA terminology

	Discount rate 5%					
	Year 1	Year 2	Year 3	Year 4	Year 5	Sum of 5 years
Contribution to asset value from earnings in :	Value of capital services or gross operating surplus					
Year 1	100					
Year 2	76	80				
Year 3	54	57	60			
Year 4	35	36	38	40		
Year 5	16	17	18	19	20	
Value in year	**282**	**191**	**116**	**59**	**20**	
Value index (year on year)	1.00	0.68	0.61	0.51	0.34	
Decline in value	**91**	**74**	**57**	**39**	**20**	**282**
	Depreciation					
Income	9	6	3	1	0	18
	Net return to capital or net operating surplus					

1. Capital services and gross operating surplus

17.29 At this point, the national accountant asks how can gross operating surplus be estimated in this way when it is derived as a balancing item in the generation of earned income account? There are two possible answers to this question. The first answer is that there is not a complete identity with gross operating surplus but the value of capital services is implicitly within it so may be noted as an "of which" item relative to gross operating surplus. Suppose the discount rate chosen is the rate that can be obtained on a bank deposit, say. This determines the amount the user of the asset needs to generate as net operating surplus if the asset is to be cost effective. If the figures for capital services and gross operating surplus are both 100, then the producer has made a reasonable choice of asset; it is earning as much for him as leaving his money in the bank. If he earns a little more than 100, he has done better than leaving the money in the bank. If the national accounts show he has earned 150, say, it may be that the producer has been very lucky indeed, perhaps realizing some monopolistic profits. However, it is also possible that there is some sort of asset he is using that has not been identified in calculating capital services, one possibility being some form of intangible asset. Similarly if the value of gross operating surplus is much lower than the value of capital services estimated, there may be good reason to question the range and valuation of assets assumed to be used in production or the quality of the estimates of gross operating surplus. Thus deriving the value of capital services in this manner is also a valuable tool for checking data quality.

17.30 The alternative to treating capital services as an element of gross operating surplus is to equate gross operating surplus with capital services exactly and to do this by determining a rate of return (discount rate) that brings this about. Many traditional analyses of productivity have used this approach and some cross-country comparisons of productivity depend on this assumption. Other studies, used at the industry level, suggest that the variation in apparent rate of return obtained in this way needs to be used, if at all, with very great caution. There is still robust discussion in academic circles about the preferred way of determining the rate of return, exogenously as described in the preceding paragraph or endogenously as described here. One way of interpreting the difference is to say that using an exogenous rate of return simply confronts the cost of capital (capital services) with the economic benefits (gross operating surplus); the endogenous rate of return gives a single figure to be contrasted with the yardstick of a "normal" rate of return.

Prices and volumes

17.31 An examination of table 17.1, or indeed any of the others, shows that the value of an asset at a point in time, such as the start of a year, can be expressed rather neatly as the sum of the capital services rendered in the year plus the discounted value of the asset at the end of the year. This is the starting point of much of the

algebraic elaboration of capital services in the literature, but with one important difference. Whereas most national accountants tend to think first in terms of current price aggregates and later (possibly) a breakdown into a volume aggregate plus a corresponding price, most descriptions of capital services run in the other direction. They assume a volume and develop a theory of the corresponding price (the "user cost"). These could be multiplied together to give a current value but much analysis is done using volume or price information.

17.32 One reason for working this way is that the assumption underlying table 17.1, that the contributions to production over the life of the asset are known, is not often true in practice. What is known, estimated or simply assumed is an index of how the efficiency changes over time. Equally the value of the asset assumed known in table 17.2 is only known on an asset-by-asset basis when each is new; all other value figures are estimates for reasons explained above. It is possible to use the identity that the start-of-year value of an asset equals capital services rendered in the year plus the discounted end-of-year value, all expressed in index number form and assuming no inflation, into one that expresses the value of the capital services as dependent on the decline in the value of the asset due to ageing (the depreciation element) and the rate of (net) return (the opportunity cost of money). If the impact of general inflation is now taken into account, the price of the capital services (usually called the user cost) can be expressed as depending on the increase in value of a new asset of the same type, the nominal cost of money and the relative year-on-year decline in value of the asset due to ageing.

17.33 It is also possible then to have different prices for different sorts of assets and look at differential movements between asset prices and the movements in the general level of inflation. (Table 17.1 was based on the very restrictive assumptions of there being neither absolute nor relative price inflation.)

17.34 Another important consideration passed over in the simple numeric tables is the following. For balance sheet data, values at the date the balance sheet is drawn up are needed. For estimates of capital services/gross operating surplus as well as for depreciation and income flows, values at average-year prices are needed. In practice, the mid-year observations are often assumed to be close approximations to the annual averages but this is not always so, especially in times of significant inflation.

D. Applying the capital service model

17.35 Once a theoretical link between the content of gross operating surplus and the capital services embodied in a fixed asset used in production is established, there are a number of other beneficial implications for the national accounts. These include the valuation of land used in production, the valuation of other non-produced natural resources, the separation of mixed income into the labour and capital components, the measurement of assets with a residual value, the treatment of costs of ownership transfer on acquisition, the treatment of terminal costs, capital maintenance, the valuation of work-in-progress on long-term projects, an alternative approach to estimating the imputed rentals of owner-occupied dwellings and the separation of the payments under a financial lease into the element to be regarded as the repayment of principal from the element regarded as interest. Each of these will be explained a little further below.

17.36 Before discussing land and other non-produced natural resources, it is useful to recall the consequences of an asset being used by a unit who is not the legal owner of the asset. The important distinction is whether the user does or does not assume the risks associated with its use in production. When the user does not assume the risks, the asset is regarded as being subject to an operational lease. In such a case the payment to use the asset is a rental and forms part of intermediate consumption. The economic benefits from using the asset in production accrue to the owner in the operating surplus of the production account relating to his leasing activity; see paragraphs 27.5 to 27.7.

17.37 When the user does assume the risks associated with the use of the asset in production, the economic benefits from using the asset in production accrue to the user and appear in his operating surplus. This is true of both produced and non-produced non-financial assets. The difference between produced and non-produced non-financial assets concerns the type of lease existing between the legal owner and the user and the type of property income paid to the legal owner of the asset.

17.38 In the case of a produced asset, the user of the asset who assumes all risks associated with the asset becomes the economic owner of the asset. The asset appears on the balance sheet of the economic owner. If the legal

owner is different, any payment from the economic owner to the legal owner is recorded as property income payable under a financial lease; see paragraphs 27.8 to 27.14.

17.39 In the case of a non-produced asset, when the user of the resource and legal owner differ, three different sets of conditions may apply. First, the legal owner may permit the resource to be used to extinction and thus transfers economic ownership of the resource. Second, the legal owner can extend or withhold permission to continued use of the resource from one year to the next and thus retains economic ownership of the resource. In this case the asset remains on the balance sheet of the legal owner but a resource lease between the legal owner and user obliges the latter to pay the former property income in the form of rent. Under the third option the economic ownership of the resource is shared to the extent that both the user and the legal owner are entitled to future economic benefits from the use of the resource; see paragraphs 27.15 to 27.25.

17.40 For all non-financial assets used in production, the estimation of the value of the capital services associated with the asset allows this to be contrasted with the property income payable for its use to determine whether the use of the asset is cost-effective.

1. Land

17.41 Land is special in that, under good management, the value may be assumed to remain constant from year to year except for the effects of inflation in land prices. That is to say, there is generally no depreciation or depletion of land and all the contribution to production can be regarded as income. (While in some circumstances, e.g., in the case of agricultural or forest land, land can be subject to depletion, for the purposes of the following exposition it is assumed that there is no depletion.) Table 17.5 shows part of a table for land that contributes 20 to production in perpetuity. A full table would have an infinite number of rows and columns. Here only a few are shown and some very simple algebra (with explanation) is used to explain how the totals are reached.

17.42 The value of the first column is the sum of 20, 20 discounted once (the second year's contribution to production discounted once), 20 discounted twice for the third year and so on if not for ever, at least for very many years. With a discount rate of 5 per cent as before, the sum of this column is 420. To see that this is so, consider a simple geometric progression. What is required is the sum of a series that can be written as:

$$S_n = a + ad + ad^2 + ad^3 + ad^4 + ad^5 + \ldots + ad^n$$

where a is the return to the asset in every period and d is the discount factor. (As noted earlier. for a discount rate of 5 per cent, the discount factor is 95.24 per cent.) If every term in the equation is multiplied by an extra factor d the result is:

$$dS_n = ad + ad^2 + ad^3 + ad^4 + ad^5 + \ldots + ad^{n+1}$$

Subtracting the second expression from the first gives:

$$S_n\,(1-d) = a\,(1-d^{n+1})$$

If d is less than unity (as it will be in a discounting framework) and n is very large, that last term becomes insignificant and the sum of the series, S_n, can be determined as $a/(1-d)$. In table 17.5, a is 20 and d is 0.9524, so the sum of the series is 420.

17.43 However, since each of the columns of the table, though one term shorter than the previous one, is also an infinite series beginning in exactly the same way, the sum of each column is also 420. Thus the decline in value of the land from year to year is zero and the whole of the 20 is not just the contribution to production but also income. In national accounts parlance, the gross and net operating surplus are both 20 and there is no depreciation or depletion. Equally the value of the capital services and the net return to capital are both 20.

17.44 As noted above, it may seem slightly odd to think of a non-produced asset contributing a "service" since in national accounts services are always produced. This is simply a reflection of the words chosen by economists

to describe the contribution of capital to production without connecting the word "service" to the specific interpretation given to it in the integrated framework of the SNA. Similarly one may hear remuneration of employees described as the cost of labour services.

Table 17.5: The case of land

	Discount rate 5%					
	Year 1	Year 2	Year 3	Year 4	Year 5	. . . Year 10 . . .
Contribution to asset value from earnings in :						
Year 1	20					
Year 2	19	20				
Year 3	18	19	20			
Year 4	17	18	19	20		
Year 10	13	14	14	15	16	. . . . . 20 . . .
Year 25	6	7	7	8	8	. . . . . 10 . . .
Year 40	3	3	3	3	4	. . . . . 5 . . .
Value in year	**420**	**420**	**420**	**420**	**420**	**420**
Value index (year on year)	1.00	1.00	1.00	1.00	1.00	. . . . 1.00 . . .
Decline in value	**0**	**0**	**0**	**0**	**0**	**. . . . . 0 . . .**
Income	20	20	20	20	20	. . . . . 20 . . .

17.45 Another term for capital services is "resource rent" and this is particularly applicable for land and other natural resources. In table 17.5, the resource rent of land is the extent to which the farmer benefits from using the land for agricultural production (20). This rent accrues whether the farmer is farming his own land or is a tenant farmer. The amount that the tenant farmer is due to pay his landlord is what the national accounts show as rent under property income. In the days when a farmer paid his rent as a share of the crop yield, the link was more obvious. What he retained represented enough to cover his costs and the cost of his own (and any hired) labour. In a monetized economy, the rent payable to the landlord is often agreed a very long time in advance. Comparing the rent earned (as operating surplus) with the rent payable as property income shows whether the agreed rent is "fair" or perhaps excessive relative to the farming income.

2. Valuing other non-produced natural resources

17.46 There are other non-produced natural resources that need to be valued in the national accounts. Looking at the future resource rents to be earned by a mineral deposit, for example, is one way to do this.

17.47 Suppose that a mining company knows the size of the deposit being mined, the average rate of extraction and the costs of extraction of one unit. After allowing for all intermediate costs, labour and the capital services of all non-financial assets used in production including rents paid on the use of any (rented) non-produced non-financial assets, what is left must represent the resource rent of the natural resource per unit extracted. By applying an expected average of this resource rent to the expected future extractions, a stream of future income can be estimated and from this, using the techniques already described, a figure for the value of the stock of the resource at any point in time.

17.48 In fact, the application of the capital service technique goes further than this. In the case of renewable non-produced natural resources such as fish in open waters, if the rate of growth is at least equal to the rate of extraction, then the value of the fish does not decline and the rate of extraction is sustainable. (If the rate of extraction is not sustainable, then the fishery is subject to depletion.) However, in the case of a mineral deposit with no natural renewable capability, then it is possible as before to separate the contribution to production into an element showing the depletion (the decline in value of the deposit) and a residual element. Because this residual amount is consistent with the idea of maintaining the level of wealth intact, it can be regarded as income.

3. Mixed income

17.49 When discussing land, above, it was pointed out that the resource rent of the land was the part that was not otherwise accounted for by intermediate consumption, the cost of hired labour and the capital services rendered by non-financial assets and the labour cost of the farmer. Very often, it is difficult to put a value on the labour of a self-employed person and so this may be merged with the resource rent on land and the capital services rendered by any non-financial assets used and described as mixed income. In principle, though, if a separate estimate of the capital services rendered by non-financial assets can be made from information about the services rendered by similar assets in other parts of the economy, then mixed income can be split into its labour and capital components.

17.50 In practice this has often proved difficult since the residual amount for self-employed income may turn out to be very small or even negative. Among the possible causes of this are that the value of output may be volatile due to such things as fluctuations in output prices or the impact of weather. The estimates for the capital services may also be high because larger companies are able to make more efficient use of capital, for example using a high value piece of equipment continuously rather than intermittently, or because they actually have other, intangible, assets, which have not been taken into account. This means the capital services for these unmeasured assets are attributed to those that are recognized but this addition is not appropriate for the self-employed worker. Thus the capital services model is unlikely to provide an accurate breakdown of mixed income but it does show the way to probe the data for both large and small enterprises to ensure that capital is being measured comprehensively and consistently.

4. Assets with a residual value

17.51 Very many assets are used by a single owner until they are worn out and worth nothing. However, this is not the case for all assets. Some are disposed of after a few years, perhaps because the cost of regular maintenance is deemed by the current owner to be too high relative to the value the asset contributes to production. Some airlines, for example, may wish to use the fact that they keep up-to-date fleets of aircraft as part of their advertising appeal. In other cases, for example with construction equipment, the original owner may simply have no further use for the asset.

17.52 Table 17.6 shows an example of an asset that is used for only four years and then disposed of for a value of 300. Again for simplicity it is assumed that the disposal value after four years is known when the asset is acquired. For example, the market in used assets may be sufficient to ensure that the value at any point is equal to the remaining services to be delivered by the asset. Inflation is still assumed to be zero.

17.53 The top, triangular, part of the table shows the normal calculation of the value of the capital services to be rendered in these four years, a value that at the outset is seen to be 1 107. To this the discounted value of the residual value of 300 must be added. This value is 247, making the total value of the asset 1 354. As in the case where an asset is held to exhaustion, the decline in the value of the asset including the residual value is lower year by year than the decline in the capital services to be rendered in these four years because there is an income element coming from the fact that the remaining value increases as the time for disposal of the asset gets closer. The total of the decline in the value of the asset, to be shown as depreciation, is 1 054. This value, together with the residual value of 300, is equal to the original value of 1 354. The total income (net operating surplus) is 121, the sum of the income arising from the use in production (68) plus the income arising from the unwinding of the discount factor on the terminal value (53).

17.54 Table 17.6 illustrates that the cumulative value of the depreciation calculated in respect of an asset should be equal to the initial value of the asset, treated as fixed capital formation, less the value to the owner on disposal of the asset. This holds whether the asset passes into use as a fixed asset by another user, is used for another purpose in the same economy or is exported.

Table 17.6: An asset with a residual value

Discount rate 5%

	Year 1	Year 2	Year 3	Year 4	Residual value	Sum of 4 years
Contribution to asset value from earnings in :						
Year 1	400					
Year 2	286	300				
Year 3	227	238	250			
Year 4	194	204	214	225		
Value in year	**1 107**	**742**	**464**	**225**	**0**	
Decline in value	**365**	**278**	**239**	**225**		**1 107**
Income	35	22	11	0		68
Residual value	**247**	**259**	**272**	**286**	**300**	
Income	12	13	14	14		53
Joint value	**1 354**	**1 001**	**736**	**511**	**300**	
Decline in value	**352**	**265**	**226**	**211**		**1 054**
Income	48	35	24	14		121

5. Costs of ownership transfer on acquisition

17.55 The costs of ownership transfer incurred on acquisition of an asset are treated as fixed capital formation. This assertion is equivalent to assuming that the services rendered by the asset must be sufficient to cover both the costs of the asset and the costs of ownership transfer. Table 17.7 shows an example where costs of 30 are incurred on the acquisition of the asset in table 17.6. In order for the asset to have exactly the same value as before on disposal, 300, the costs of ownership transfer have to be accounted for during the period in which the owner who incurred the costs uses the asset in production. The figures in the triangular part of table 17.7 are added to those in the corresponding part of table 17.6 giving increased value to the asset in each year until the end of year 4, increased depreciation and slightly increased income, because the costs of ownership transfer are also viewed as the present value of the extra services required to meet the costs.

17.56 If the costs of ownership transfer were to be attributed to the whole life of the asset and not just that part for which the unit that paid the costs owns the asset, there is a mismatch between the calculated value of the asset and the market value demonstrated in the sale at a value of 300. In such a case, the data have to be brought back into reconciliation by means of an entry in the other changes in the volume of assets and liabilities account but this means that not all of the costs incurred by the initial owner are shown as a charge against gross value added and so income is over-stated. This may be inevitable when assets are sold unexpectedly but in the case of many vehicles and large mobile construction equipment, the purchaser may well take account of the value to be realized on sale after a given period. When this is so, every effort should be made to take account not only of the residual value but also factor the expected life length into the calculations of the amount of depreciation to be attributed to the costs of ownership transfer so there is no residual value of these costs left on disposal.

Table 17.7: Example of costs of ownership transfer on the acquisition of the asset in table 17.6

	Discount rate 5%					
	Year 1	Year 2	Year 3	Year 4		Sum of 4 years
Contribution to asset value from earnings in :						
Year 1	10					
Year 2	9	9				
Year 3	6	7	7			
Year 4	5	5	6	6		
Value in year	**30**	**21**	**13**	**6**		
Decline in value	**9**	**8**	**7**	**6**		**30**
Income	1	1	0	0		2
Residual value	**1 384**	**1 022**	**749**	**517**	**300**	
Decline in value	**361**	**273**	**232**	**217**		**1 084**
Income	49	36	25	14		123

6. Terminal costs

17.57 Table 17.6 considered the case where an asset had a residual value at the time the current owner disposed of it. It is also possible to have assets that have significantly large costs associated with disposal that the owner is obligated to incur. Examples include the decommissioning costs of nuclear power stations or oil rigs or the clean-up costs of landfill sites. The following discussion is not meant to downplay the practical difficulty of estimating terminal costs, simply to demonstrate why in principle the existence of terminal costs should reduce the value of the asset throughout its life.

17.58 Terminal costs are similar to capital formation in that they should be covered by gross operating surplus generated during the time the asset is used in production. To avoid a negative value of the asset at the end of its life, the expected terminal costs are added to the value of the asset at the time the asset enters the balance sheet, with a counterparty entry of provisions at the liability side, both to be recorded in the other changes in the volume of assets and liabilities account. At the end of the life of the asset, the actual investment expenditures on terminal costs, which lead to a positive change in the value of the asset, are counterbalanced with a reversal of the flows in the beginning of the period, i.e., a decline in the value of assets with a concomitant decline of the related provisions, again recorded as other changes in the volume of assets and liabilities; see also paragraphs 11.233 to 11.235.

17.59 Table 17.8 shows an example of how terminal costs should be recorded. The analysis of the data is similar to that for table 17.6 but also includes the recording of provision charges for the terminal cost. The gross fixed capital formation consists of two parts, the initial acquisition of the asset and the terminal costs incurred at the end of the asset's life. The combined present value of both types of gross fixed capital formation is equal to the present value of the capital services. The value of the capital services to be provided by the asset in use is still 1 107. The initial value of the asset is thus equal to the present value of the capital services over the life of the asset less the discounted value of the terminal cost of 300 which will be incurred when the asset is disposed of. Subtracting the present value of the anticipated terminal cost of 247 from the present value of the capital services implies that the initial value of the asset is 860, which is lower than without the presence of terminal costs. The initial value of 860 is recorded as capital formation in year 1. The terminal cost will be recorded as capital formation at the time of disposal, but it is important that the depreciation associated with the terminal cost be charged against the gross operating surplus earned during the time that the asset is in service. Hence, entries are made in the other changes in the volume of assets and liabilities account. The present value of the terminal cost (with a positive sign) is added to the value of the asset,

allowing the terminal investment to be written off. To maintain the correct contribution of the asset to net worth, a contingent liability (a provision) of the same amount is also entered. The value of the asset shown on the balance sheet, 1 107 in year 1, is equal to the capital formation for the initial acquisition of the asset plus the discounted value of the capital formation associated with the terminal costs. When discounting is used, the carrying amount of a provision increases in each period to reflect the passage of time. These amounts (shown in the row "unwinding of the discount") also need to be recorded as positive and negative entries in the other changes in the volume of assets and liabilities account each year. The unwinding of the discount also affects the measure of depreciation. If the decline in the value of the asset is used the measure of depreciation, as would normally be the case, the cumulative depreciation over the four years shown in the final column of 1 107 understates the gross fixed capital formation of 1 160. The difference of 53 reflects the cumulative unwinding of the discount on the terminal costs (300 – 247). The depreciation recorded should equal the change in the value of the asset plus the unwinding of the discount to ensure that the total value of the terminal costs are fully depreciated. (This treatment is special for the accounting of terminal costs and should not be used in accounting for other assets.) If this combined amount is recorded as depreciation, then the cumulated value of depreciation, 1 160, is equal to the capital formation associated with the acquisition of the asset plus the capital formation associated with its disposal of the asset. Adding this to the cumulated value of income (15) gives a cumulated value of 1175 for the capital services rendered by the asset. At the time that the asset is decommissioned and the terminal costs are incurred, gross capital formation of 300 is recorded. In addition, the provision is reversed, showing an entry of -300 in other changes in the volume of non-financial assets and -300 in other changes in the volume of provisions (contingent liabilities), bringing the cumulative value of both the other changes in the volume and the provision charges to zero.

Table 17.8: An asset with a terminal cost

Discount rate 5%

	Year 1	Year 2	Year 3	Year 4	Residual value	Sum of 4 years
Contribution to asset value from earnings in:						
Year 1	400					
Year 2	286	300				
Year 3	227	238	250			
Year 4	194	204	214	225		
Combined value in year	**1,107**	**742**	**464**	**225**	**0**	
Less: Terminal cost	247	259	272	286	**300**	
Value of initial asset	**860**	**483**	**192**	**-61**		
Plus: Terminal cost	247	259	272	286		
Value shown on balance sheet	**1,107**	**742**	**464**	**225**		
Decline in value	365	278	239	225		1,107
Unwinding of the discount on terminal cost	12	13	14	14		53
Depreciation						
= decline in value + unwinding of discount	**377**	**291**	**253**	**239**		**1,160**
Income	23	9	-3	-14		15
SNA values:						
Gross fixed capital formation	860				300	1,160
Asset value	1,107	742	464	225	0	
Depreciation	377	291	253	239		1,160
Other change in volume, non-financial asset = discounted value of terminal cost, year 1 + unwinding of discount in all years	259	13	14	14	-300	0
Change in provision (= contingent liability)	-259	-13	-14	-14	300	0

17.60 Anticipated costs of ownership transfer on disposal of an asset, including legal fees, commission, transport and disassembly, etc., should in principle be treated in the same way as terminal costs.

7. Major repairs and renovations

17.61 Major repairs and renovations that extend the life of an asset are treated as capital formation and the value of the repairs and renovations is added to the value of the asset before the work was undertaken. The example of costs of ownership transfer on acquisition of an asset can be applied directly in this case, excepting only that the costs are incurred in a year other than the year of acquisition. The value of the capital repairs is supposed to be equal to the discounted value of the increased services that the asset will yield, either by increasing the services in each of the remaining years of the initial life length, or extending the life length, or both.

17.62 The value of the capital repairs can be analysed by merging the value with that of the asset in question and reworking all the calculations of the services to be rendered, the income generated and the depreciation for the asset and the maintenance taken together. However, as table 17.7 shows, it is also possible to leave the calculations for the asset as they were and simply aggregate them with a separate analysis of the maintenance undertaken as if it related to a wholly new asset.

8. Work-in-progress for long term projects

17.63 Table 17.9 relates to an asset with a final value of 200 that is to be constructed over a period of four years. One possibility is that, assuming no inflation, work-in-progress of 50 should be recorded in each of the four years. However, consistent with the notion of discounting future economic benefits, an alternative view is preferable. Suppose still that there is a discount rate of five per cent. In each year, the value of the completed asset in each of years 1 to 3 will be 172.8, 181.4 and 190.5, each of which will cumulate to a value of 200 after, respectively, three, two or one year(s) accumulation in value of 5 per cent. Dividing each of these by four implies that even if equal amounts of work are put in place in each year, the values to be recorded should be 43.2, 45.4, 47.6 and 50.0. In addition, though, there will be income arising from a net return to the work already put in place. This would give a time series for the work put in place and (net) income of 2.2, 4.5 and 7.1 in each of years two to four giving the value of the partially complete structure as 43.2, 90.7, 142.9 and 200.0. These are the values that a purchaser of the partially completed structure would be willing to pay, given that he would forgo the income from the finished structure for up to three years.

Table 17.9: Valuing work-in-progress spanning several years

Discount rate 5%

	Year 1	Year 2	Year 3	Year 4
Value of final product in each year	172.8	181.4	190.5	200.0
Value of construction activity (one quarter of final value)	43.2	45.4	47.6	50.0
Income accruing on work put in place				
In year 1		2.2	2.3	2.4
In year 2			2.3	2.4
In year 3				2.4
End year value	43.2	90.7	142.9	200.0

9. Owner-occupied dwellings

17.64 The integrated framework of the SNA specifies that owner-occupied housing services should be included in the production boundary and form part of household consumption. In a situation where there is either no rental market in such properties or only a very limited one, this is difficult to implement. Cross-country comparisons of the results (as in the *International Comparison Program (ICP)*) show that the different techniques used produce highly variable results. Here too, the use of the techniques described in this chapter may be helpful.

17.65 In the example for land, it is possible to deduce a value of 420 for the land that yielded resource rent of 20 every year in perpetuity. While modern houses do not last forever, if they are assumed to last for, say, fifty years or more, the discount factor applied over this period gives contributions to the value of the asset that are small at the end. Having said that, unlike the case of land, the house does depreciate (whereas the capital service for land is entirely associated with the net return to capital that reflects the unwinding of the discount). However, in comparison with shorter lived assets, the capital services for houses tend to be more associated with the net return to capital and less associated with depreciation, which may be small as a share of the asset value. The *OECD Manual on Measuring Capital, 2nd edition* provides examples of how the services of owner-occupied housing can be measured with this type of decomposition. Given that the market for houses is much better established than for rented housing, this type of decomposition may also provide a source of useful and comparable data for a troublesome area of national accounts. However, this method should be used with caution since houses are often bought in the expectation of making significant real holding gains. Furthermore, it should also be recognized that for many houses, a sizeable share of the value derives from the value of the land on which the house is situated, so the rental includes rent of land that is not subject to depreciation.

10. Financial leases

17.66 The process of discounting future income streams to determine present value applies to financial assets as well as to non-financial assets. Consider an agreement with a bank to borrow 1 000 over a period of five years at five per cent interest. The total amount to be paid to the bank will be 1 100 at a rate of 220 per year. But, as table 17.10 shows, each year's payment does not consist of repayment of principal of 200 and interest of 20. Interest is payable on the remaining balance, so is highest in the first year and is zero in the last year. (This is a result of the simplifications used in the chapter. In practice, interest would be charged daily and so even in the last year some interest would be payable. However, the way in which the balance between interest and repayment of principal changes over time as the loan is repaid holds.)

17.67 The arithmetic behind table 17.10 is indistinguishable from any of the other tables in this chapter demonstrating that the same principles hold for valuing financial assets as for non-financial assets. The same methodology that can be used to show how much of the contribution to production is depreciation and how much contributes to net operating surplus can also be used to show how much of the payment to the bank is a repayment of capital and how much is interest. Both depreciation and a repayment of capital feature in the accumulation accounts as changing the value of the stock of assets. The contributions to net operating surplus and interest are both income flows and are shown in the current accounts.

17.68 This duality is especially important when an asset is acquired under a financial lease. In this case, table 17.10 can be used to show both the change in value of the asset and the change in the loan taken out to pay for it. Cost-benefit analyses of the merits of borrowing to acquire assets also depend on this sort of calculation. Unless the asset can contribute at least as much to production as the interest due to the lender, it is not a good investment. Even if a producer has sufficient funds available to purchase an asset without borrowing, it makes sense to undertake such an analysis since the alternative to acquiring the asset is to convert the funds to an asset that will either earn income or appreciate and yield holding gains.

Table 17.10: The case of a financial lease

	Interest rate 5%					
	Year 1	Year 2	Year 3	Year 4	Year 5	Sum of 5 years
Contribution to loan value from payments due in :						
Year 1	220					
Year 2	210	220				
Year 3	200	210	220			
Year 4	190	200	210	220		
Year 5	181	190	200	210	220	
Loan value in year	**1000**	**819**	**629**	**430**	**220**	
Repayment of principal	**181**	**190**	**200**	**210**	**220**	**1000**
Interest	39	30	20	10	0	100

E. Capital measurement

17.69 This section provides an overview of a set of accounts that encompass all aspects of capital measurement, including wealth stocks, productive stocks, depreciation and depletion, revaluation, other changes in volume of assets and liabilities, and capital services. These measures are all closely associated with the PIM, and if they are compiled in an integrated manner, the quality of key measures such as net domestic product, net worth and productivity will be enhanced. These measures encompass at least fixed assets and non-produced natural resources, but more broadly could encompass other non-financial assets that might be compiled using the PIM including inventories and consumer durables (the compilation of which is encouraged as a supplementary item on the balance sheet).

1. Basics of capital measurement

17.70 Because capital plays two basic roles in the integrated framework of the SNA, as a contributor to wealth and income and as a contributor to the production process, the capital measures in the SNA fit in two broad categories. Wealth stocks represent the value of the capital stock and show how these add to the net worth of institutional sectors and the total economy. Associated with wealth stocks are flows such as capital formation, depreciation and depletion, and other changes in assets and liabilities that are related to the measurement of net value added from production, net income and the acquisition of wealth. These measures are associated with changes from period to period in the value of the wealth stock and contribute to the important net measures that appear in the supply and use tables and the institutional sector accounts including balance sheets. The second category of measures is associated with the efficiency of the stock of assets in providing capital services. A measure of capital stock that is adjusted for current and past declines in efficiency is called the productive stock, and it is used in preparing aggregate measures of capital services. The set of measures that focus on capital services are used especially for estimating productivity and the contribution of the capital stock to economic growth. While both sets of measures are constructed from the same capital flows, it is important that compilers and users of the data should clearly distinguish between the two.

17.71 Before getting into the details of measurement, it is appropriate to recall briefly the various simplifying assumptions that underlie the numeric examples in the chapter, assumptions that would be totally inappropriate in serious estimation of capital service flows. The most important are:

a. Somewhat different figures would emerge if any of the tables were to be calculated for the start of year, end of year or mid-year. Mid-year flows need to be discounted by half the annual discount rate to give start of year figures, for example.

b. The assumption that there is no price inflation, either overall or between different assets, is clearly

unrealistic. Changes due to price movements need to be separately identified and included in the revaluation account.

c. The general preference for an age-efficiency approach to determine the value of capital stock should not be taken to mean that information on age-price decline, when such exists, is to be ignored. The solution is to find an age-efficiency pattern that matches the observed decline in prices. Where such a match can be made, this may inform the choice of age-efficiency declines where no matching price information is available. Use of geometric depreciation simplifies this choice by using a single depreciation rate to describe both the age-efficiency and age-price patterns.

17.72 There is a question about the appropriate level of detail to be used for assets. They are very diverse and even products that appear superficially similar, such as aircraft, may have quite different specifications. This is a problem that must be resolved whatever means of determining a stock figure for assets is used. The final choice may be a source of inaccuracies, or conversely, may lead to extra resource cost for little improvement in the results.

17.73 So far, this chapter has mostly focused on a single asset, for which it is assumed that the owner of the asset is able to calculate, at least approximately, its capital service – the contribution of the asset in the production process – over the anticipated life of the asset. Using this information, it is possible to derive the basic stocks and flows associated with the asset.

17.74 For national accounts compilers, the situation is different. There is a vast variety of assets, including non-produced natural resources and fixed assets of different ages. Information on capital services is not readily available and must be inferred from other information. Prices of fixed assets may only be observed when the asset is initially acquired. The assets can be organized by classifications, such as the SNA's classifications of non-financial assets, and possibly by more detailed classifications such as the *CPC*. The data on fixed assets recorded in company accounts may be of limited usefulness to compilers because it is recorded at historical cost.

17.75 In practice, the measurement of capital stocks is usually based in part on estimates that may have been prepared as part of the compilation of GDP. These estimates need to be organized in time series to support a PIM. For fixed assets, including cultivated biological resources yielding repeat products, the basic information required for the PIM is:

a. Time series of estimates of gross fixed capital formation (GFCF) by type of asset (according to the SNA's classification of non-financial assets) at current prices and in volume terms;

b. Time series of price indices that can be used as deflators for each type of asset;

c. An age-price profile (or an associated age-efficiency profile) for each type of asset. If geometric depreciation is used (as the SNA recommends as a default option; see paragraph 7.281), then the only information needed is a depreciation rate for each type of asset. In paragraphs 17.22 to 17.24, one can see that in the case of geometric depreciation, the age-price profile and the age-efficiency profile are the same. If geometric depreciation is not used, the age-price profile must be derived from the age-efficiency profile (or vice versa) to ensure that the two profiles are consistent (see Annex D of the *OECD Manual on Measuring Capital, 2nd edition*).

d. If other changes in the volume of assets are relevant for a type of asset, those other changes in volume should be added to the value of the assets.

e. To support the calculation of net value added and net operating surplus by industry, as well as multifactor productivity estimates by industry, the PIM will need to be calculated by industry as well as by type of asset. Therefore, time series of fixed capital formation and other changes in volume of assets by type of asset need to be prepared for each industry.

f. To support wealth and depreciation estimates for institutional sector accounts, the PIM will need to be calculated by institutional sector as well as by type of asset. Therefore, time series of fixed capital formation and other changes in volume of assets by type of asset need to be prepared for each institutional sector. Typically, price indices and depreciation rates differ across types of assets but are assumed not to differ between institutional sectors for each type of asset.

2. Calculating depreciation

17.76 Depreciation is defined as the decline, during the course of the accounting period, in the current value of the stock of fixed assets owned and used by a producer as a result of physical deterioration, normal obsolescence or normal accidental damage; see paragraph 7.267. A decline in value during the accounting period can be understood as the sum of two components. One component is the price change that reflects the price movement of the asset class under consideration, *given a particular age* (and measured, for example, by comparing the price of a new asset at the beginning of the period with the price of a new asset at the end of the period). Another component is the price change that reflects the ageing of the asset *given a particular price level for the asset class* (and measured, for example, by comparing the price of a new asset with the price of a one-year-old asset). Depreciation is measured as the price change due to ageing, thereby controlling for the overall movements in asset prices. This fits with the idea that depreciation must be measured with reference to a given set of prices, that is, the average prices of the type of asset of constant quality over the period; see paragraph 11.229.

17.77 The measurement of depreciation is directly associated with the age-price profile of an asset or of a cohort of assets. The rate of depreciation of a t-year-old asset is the difference in the price of a t-year-old asset and a t+1-year-old asset, expressed as a proportion of the t-year old asset. For geometric depreciation, this proportion is constant for all years t.

17.78 Careful consideration should be given to selecting the depreciation rates, or more generally, the age-price profiles. Some fixed assets (such as motor vehicles) have prices from sales of used, or second-hand assets that can be used to directly estimate the depreciation rate. In other cases, information on the typical service lives of the asset can be used. The selection of depreciation rates is discussed in more detail in the *OECD Manual on Measuring Capital, 2nd edition.*

3. Calculating the net ("wealth") stock

17.79 The stock of assets surviving from past periods and corrected for depreciation is the "net" or "wealth" capital stock. The net stock is valued as if the capital good (used or new) were acquired on the date to which a balance sheet relates. The net stock is designed to reflect the wealth of the owner of the asset at a particular point in time. Hence, the notion of "wealth" stock seems more descriptive than "net" stock because there are other types of "net" capital measures. The wealth stock is the measure that enters balance sheets of the institutional sector accounts.

4. Calculating productive stock

17.80 The stock of a particular type of asset surviving from past periods and corrected for its loss in productive efficiency is the productive capital stock. Productive stocks constitute an intermediate step towards the measurement of capital services. The flow of capital services is assumed to be proportional to the productive stock of an asset class. If the factor of proportionality is constant, the rate of change of capital services will equal the rate of change of the productive stock. The rate of change of the productive stock is assumed to be the volume component when it comes to splitting the change in the total value of capital services at current prices into a price and a volume component. The concept of a productive stock is only meaningful at the disaggregated level of a particular type of asset. Once each asset's productive stock is combined with the corresponding capital service price, the resulting value represents the flow of capital services.

5. Perpetual inventory model for non-renewable mineral and energy resources

17.81 For non-renewable mineral and energy resources, the PIM should be applied for each type of asset, with the resulting estimates then summed across asset types for wealth stocks or aggregated using chain indices for volume estimates. Data may be available on stocks and extraction in physical volume terms. The valuation of stocks is explained in paragraphs 14.56 and 14.57 as well as the annex to chapter 4 on Flows, stocks and accounting rules, and the measurement of depletion is explained in paragraphs 11.236 to 11.238. A PIM for each type of asset can be calculated in physical terms or in constant prices. Compared with fixed assets, the

PIM for a mineral resource is simpler in that depreciation does not need to be calculated. The opening stock for each year is carried forward from the closing stock of the previous year. There is no gross capital formation, so additions to the stock consist solely of other changes in the volume of assets (if any), which might include new discoveries, for example. Extraction of the resource is recorded as depletion and is subtracted in the calculation of the closing stock. The closing stock at the end of the year is equal to the opening stock plus other changes in the volume of assets less depletion.

6. User costs

17.82 Capital services are considered the appropriate measure of capital input in the production process, but to make them useful one needs to develop measures of value, price and volume of capital services. Depreciation does not represent the full cost of using a fixed asset, as one can see by imagining a case where the fixed asset is leased by its owner to another unit that uses it in production. The owner will charge a rental price that includes not only depreciation but also a net return to capital that reflects the financing costs of capital.

17.83 If there are rental markets, observed rentals could provide a first approximation to the user cost of capital for owner-users of the same assets. While rental markets may be common for some types of assets, such as dwellings, for most asset types rental prices are not available. Thus, various components of cost must be added up to approximate the cost of capital services. In the simplest case, three main cost elements are considered: (i) the cost of financing or the opportunity cost of the financial capital tied up through the purchase of the asset (which is used for calculating the net return to non-financial assets used in producing non-market output); (ii) depreciation, i.e. the value loss due to ageing; and (iii) revaluation, i.e. the expected price change of the class of assets under consideration. National accounts data on depreciation and prices can be used for estimating components (ii) and (iii), while component (i) might be based on gross operating surplus (along with a portion of gross mixed income) as part of the calculation of the net return to capital. Implementing the user cost methodology requires various assumptions that are discussed in the *OECD Manual on Measuring Capital, 2nd edition*.

7. Aggregation

17.84 The final step in the compilation of capital stock and capital service statistics is to aggregate across asset types to calculate aggregate stocks for institutional sectors, industries or the total economy. In current prices, aggregation is taken as the simple summation of stocks or capital services across asset types. Balance sheets are generally compiled in the current prices of the beginning or the end of the period.

17.85 For aggregation in volume terms, the calculations described in chapter 18 on Measuring prices, volumes and productivity are typically applied. Because the wealth stock is presented in current prices in the balance sheet, it may not be necessary to calculate it in volume terms. But if desired, the volume measure of the wealth stock can be calculated.

8. A table on capital services

17.86 A table can be compiled to compare data coming from the integrated framework of national accounts for the elements of gross value added with those derived from applying the theory of capital services to the national accounts data on capital stock. The table can be prepared in current prices, and the value added and capital services entries can be prepared in volume terms, with the capital service values in volume terms used for analysis of capital and multifactor productivity as described in section F of chapter 18.

17.87 The first level of detail that might be examined is given in table 17.11. This assumes that information on value added by institutional sector is available. The figures for operating surplus for non-financial and financial corporations may be compared with capital services from various types of non-financial assets (other than natural resources), non-produced non-financial assets (other than natural resources), and natural resources. The figures for operating surplus of general government and NPISHs and those for capital services of these sectors must be equal, because by convention the net return to capital on non-financial assets used in non-market production is derived from an opportunity cost perspective when output is estimated as the

sum of costs (see paragraphs 4A.6, 4A.7 and 4A.11). The capital services for household dwellings should match gross operating surplus for households and the figure for capital services for other household unincorporated enterprises is to be compared with the national accounts figure for mixed income, which also includes a labour remuneration element.

Table 17.11: The outline of a table on capital services

Value added and income	**Total/Gross**	**Depreciation**	**Depletion**	**Net**
Value added				
Remuneration of employees				
Mixed income				
Operating surplus				
Non-financial corporations				
Financial corporations				
General government				
NPISHs				
Households				
Taxes less subsidies on production				
Capital services		**Capital services**	**Decline in value**	**Net return to capital**
Total economy				
Produced non-financial assets (excluding produced natural resources)				
Fixed assets				
Market producers (excluding households)				
Non-financial corporations				
Financial corporations (excluding central bank)				
Non-market producers				
General government				
NPISHs				
Central bank				
Households				
Dwellings				
Other unincorporated enterprises				
Inventories				
Non-produced non-financial assets (excluding non-produced natural resources)				
Natural resources				
Fixed assets				
Inventories				
Non-produced natural resources				

Chapter 18: Measuring prices, volumes and productivity

A. Introduction

18.1 Chapter 15 on Supply and use tables describes how the goods and services account may be compiled and elaborated within a supply and use table. The changes in the values of flows of goods and services can be directly factored into two components, one reflecting changes in the prices of the goods and services concerned and the other reflecting changes in their volumes. One major advantage of compiling price and volume measures within an accounting framework, such as that provided by the supply and use tables, is that a check is provided on the numerical consistency and reliability of the set of measures as a whole. This is particularly important when every flow of goods and services in the economy has to be covered, including non-market goods and services whose valuation is even more difficult in volume terms than at current prices.

18.2 Another advantage of compiling price and volume measures within an accounting framework is that implicit price or volume measures can be derived for certain important balancing items. In particular, gross value added can be measured in real terms by subtracting intermediate consumption in volume terms from output in volume terms, the so-called "double deflation" method. Double deflation may be used at the level of an individual enterprise, industry or sector. However, the primary objective of the integrated framework of the SNA is not simply to provide guidelines on measures of changes in prices and volumes for the main aggregates of the integrated framework but to assemble a set of interdependent measures that make it possible to carry out systematic and detailed analyses of inflation and economic growth.

1. Index number theory

18.3 Section B gives an overview of the theory of index numbers as applied in the SNA. Manuals have been published on the theory and practice of consumer price indices (CPIs) and on producer price indices (PPIs). These are *Consumer Price Index Manual: Concepts and Methods (*International Monetary Fund, International Labour Organization, Statistical Office of the European Union (Eurostat), United Nations Economic Commission for Europe, Organisation for Economic and Co-operation and Development, and the World Bank (2020)) and *Producer Price Index Manual: Theory and Practice (*International Labour Organization, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations, Economic Commission for Europe and the World Bank (2004)). A further manual is the one on export and import price indices (XMPIs), *Export and Import Price Index Manual: Theory and Practice* (International Labour Organization, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations Economic Commission for Europe and World Bank (2009)). In particular chapter 2 of the *CPI Manual*, chapter 14 of the *PPI Manual* and chapter 15 of the *XMPI Manual* outline how such indices fit into the integrated framework of the SNA.

18.4 The first topic in section B concerns the choice of an appropriate methodology for compiling inter-temporal price and volume measures for flows of goods and services in a national accounting context. Section B also deals with the consequences of price variation due to price discrimination; that is, how to treat goods or services that are sold to different purchasers on the same market in the same period at different prices. Such differences need to be clearly distinguished from price differences attributable to differences in qualities. This section also discusses the treatment of changes in quality over time, including the appearance of new products and the disappearance of old products.

2. Inter-temporal price and volume series

18.5 Section C shows how the considerations in section B can be applied to the integrated framework of the SNA and time series of volumes and prices be derived. It discusses not only the elements of the goods and services account but also how stocks of non-financial assets can be decomposed into price and volume elements.

18.6 Like section B, section C does not aim to be exhaustive in its coverage but draws on, and refers to, other manuals, specifically the *Handbook on prices and volume measures in national accounts* (Eurostat, 2016)

and chapter IX of *Quarterly National Accounts Manual* (International Monetary Fund (IMF), 2017).

3. Real income

18.7 Section D addresses the question of expressing key aggregates of the integrated framework of the SNA that do not themselves have price and volume components in real terms, allowing an analysis of the impact of terms of trade on national income, for instance.

4. Volume measures for particular products

18.8 The methods discussed in section C of this chapter can be used to appropriately derive volume and price measures for most products. For a few products that have unusual characteristics, this general guidance may not be sufficient, and section E provides more specific guidance for those cases. The specific guidance in this section draws from handbooks such as the *Handbook on prices and volume measures in national accounts* (Eurostat, 2016) and other handbooks that are cited in the section.

5. Productivity

18.9 Section F describes measures of productivity, which measure changes in the volume of output relative to changes in the volume of inputs. These measures are ratios in which the numerator is a volume measure of output or value added and the denominator is a volume measure of one or more inputs, especially of labour, capital or the combined contributions of labour and capital. This section draws on the *OECD Manual on measuring capital, 2nd edition* and the *OECD Manual on measuring productivity*.

6. International price comparisons

18.10 The majority of price and volume index numbers were developed to measure changes in prices and volumes over time; however, they can also be used to make spatial comparisons, that is, to compare levels of prices and volumes between different regions or countries at the same point in time. These metrics enable comparisons of standards of living, levels of economic development, or levels of productivity in different countries.

18.11 These topics are addressed in section G, first in theoretical terms and then in terms of the implications for national accountants. *Measuring the Real Size of the World Economy: The Framework, Methodology, and Results of the International Comparison Program – ICP* (World Bank, 2013) describes the methodology underlying the International Comparison Program (ICP).

7. Further information

18.12 This chapter aims to do no more than introduce the most important concepts and considerations of the application of index number theory to the derivations of volume series within the SNA. Further information should be sought from the other manuals cited.

B. An overview of index number theory

1. Quantities, prices and values

18.13 For each individual type of good or service it is necessary to specify an appropriate quantity unit in which that good or service can be measured. Goods or services may be supplied in units that are either discrete or continuously variable. Automobiles, aircraft, computers, haircuts and appendectomies are examples of goods or services provided in discrete or integral units. The quantities of such goods and services are obtained simply by counting the number of units. Oil, electricity, sugar and transportation are examples of

goods or services provided in units that vary continuously in respect of characteristics such as weight, volume, power, duration and distance. The choice of physical unit, and its price in relation to the unit selected, is therefore a matter of convenience. For example, the price quoted per tonne is one thousand times greater than one quoted per kilo. As long as the price is expressed in a manner consistent with the unit of volume, the value (v) at the level of a single, homogeneous good or service is equal to the price per unit of quantity (p) multiplied by the number of quantity units (q), that is: $v = p \times q$.

Additivity of quantities, prices and values

18.14 Certain important properties in relation to the additivity of quantities, prices and values may be briefly noted:

a. Quantities are additive only for a single homogeneous product. For example, it is not economically meaningful to add 10 tonnes of coal to 20 tonnes of sugar. Less obviously, the addition of 10 automobiles of one type to 20 automobiles of another type would not be economically meaningful either if they differ in quality.

b. The price of a good or service is the value of one unit of that good or service. It varies directly with the size of the unit of quantity selected and in many cases can be made to vary arbitrarily by changing the unit of quantity, for example, by choosing to measure in tonnes instead of in kilograms. Prices, like quantities, are not additive across different goods or services. An average of the prices of different goods or services has no economic significance and cannot be used to measure price changes over time.

c. Values are expressed in terms of a common unit of currency and are additive across different products. Values are invariant to the choice of quantity unit.

18.15 In a market system, the relative prices of different goods and services should reflect both their relative costs of production and their relative utilities to purchasers, whether the latter intend to use them for production or consumption. Relative costs and relative utilities influence the rates at which sellers and buyers are prepared to exchange goods and services on markets. An aggregation of the values of different goods and services necessarily reflects the choices of which goods and services have been produced and consumed at the currently prevailing prices.

Volume, quantity, price and unit value indices

18.16 ***A volume index is an index showing the average of the proportionate changes in the quantities and qualities of a specified set of goods or services between two periods of time***. The quantities compared over time must be those for homogeneous items and the resulting quantity changes for different goods and services must be weighted by their economic importance, as measured by their relative values in one or other, or both, periods. It is usually not possible to directly compare qualities over time, though, on occasion, a direct volume indicator may include a quality indicator. In most cases, however, the measurement of changes in qualities is implicit, because volume indices are derived by deflating values by price indices that hold quality constant thereby resulting in a volume index that combines the effects of changes in quantities and changes in qualities. For these reasons volume is a more correct and appropriate term than quantity in order to emphasize that quantities must be adjusted to reflect changes in quality.

18.17 Unfortunately, it may sometimes happen, especially in the field of international trade statistics based on customs documentation, that the data from which price and volume indices have to be calculated are not sufficiently detailed or are otherwise inadequate for the purpose. For example, the basic information available may be limited to the total number of units of some group of products imported or exported, or their total weight, for example, the total number of pairs of shoes, or total weight of equipment of a certain type. Indices built up from information of this kind are not volume indices when the numbers, or weights, cover different items selling at different prices. They are sometimes described as “quantity indices” for this reason. The “price” indices associated with such indices are usually described as average or “unit value” indices. Unit value indices measure the change in the average value of units that are not necessarily homogeneous and may be affected by changes in the mix of items as well as by changes in their prices. Unit value indices cannot therefore be expected to provide good measures of average price changes over time for

groups of non-homogeneous items.

2. Inter-temporal index numbers of prices and volumes

18.18 The index numbers of interest within the SNA are designed to decompose changes in value aggregates into their overall change in price and volume components. A price index can be written and calculated as a weighted average of the proportionate changes in the prices of a specified set of goods and services between two periods of time, say a reference period 0 and current period *t*. Similarly, a volume index can be written and calculated as a weighted average of the proportionate changes in the volumes of a specified set of goods and services between two periods of time, say a reference period 0 and current period *t*. There are many index number formulae differing from each other mainly in the weights which they attach to the individual price or quantity relatives and the particular form of average used, whether it is arithmetic, geometric, harmonic, etc. These alternative formulae, their properties and relative merits, are outlined in detail in the *CPI* and *PPI Manuals*.

Laspeyres and Paasche indices

18.19 The two most commonly used index formulae are the Laspeyres and Paasche indices. The Laspeyres price index (L_P) is defined as a weighted arithmetic average of the price relatives using the value shares of the reference period 0 as weights:

$$L_P = \sum_{i=1}^{n} \left(\frac{p_i^t}{p_i^0}\right) S_i^0 = \frac{\sum_{i=1}^{n} \left(\frac{p_i^t}{p_i^0}\right) p_i^0 q_i^0}{\sum_{i=1}^{n} p_i^0 q_i^0} \equiv \frac{\sum_{i=1}^{n} p_i^t q_i^0}{\sum_{i=1}^{n} p_i^0 q_i^0} \qquad (1)$$

That is, where $p_{i,}^0$ q_i^0 and $v_i^0 = p_i^0 \times q_i^0$ are the prices, quantities and values in period 0 of $i = 1, \ldots, n$ products and $s_i^0 = v_1^0 / \sum_{i=1}^{n} v_{i,}^0$ the value shares in period 0. Similar expressions with superscripts *t* refer to period *t.*

18.20 Note from (1) that the Laspeyres price index can be defined as the change in value of a basket of products whose composition is kept fixed as it was in the reference period 0. The Laspeyres volume index (L_Q) can be similarly defined as the change in the value of a basket whose composition every period is updated but the prices of the reference period 0 are applied to the new quantities (or volumes), that is:

$$L_{Q=} \sum_{i=0}^{n} \left(\frac{q_i^t}{q_i^0}\right) s_i^0 \equiv \frac{\sum_{i=1}^{n} p_i^0 q_i^t}{\sum_{i=1}^{n} p_i^0 q_i^0} \qquad (2)$$

18.21 Paasche indices also exist in both price and volume forms. The Paasche index differs from the Laspeyres index in two respects. It uses a harmonic mean instead of an arithmetic average and the fixed period volumes or prices are those of the current period t. The Paasche price index is given by:

$$P_P = \left[\sum_{i=1}^{n} \left(\frac{p_i^t}{p_i^0}\right)^{-1} S_i^t\right]^{-1} \equiv \frac{\sum_{i=1}^{n} p_i^t q_i^t}{\sum_{i=1}^{n} p_i^0 q_i^t} \qquad (3)$$

and a Paasche volume index, with fixed current period weights or prices, by:

$$P_{Q=} \left[\sum_{i=1}^{n} \left(\frac{q_i^t}{q_i^o}\right)^{-1} s_i^t\right]^{-1} \equiv \frac{\sum_{i=1}^{n} p_i^t q_i^t}{\sum_{i=1}^{n} p_i^t q_i^o} \qquad (4)$$

Deflation and volume series using Laspeyres and Paasche formulae

18.22 The index of the change in monetary values between two periods, $I_V = \sum_{i=1}^{n} v_i^t / \sum_{i=1}^{n} v_i^{t-1}$, reflects the combined effects of both price and quantity changes. When Laspeyres and Paasche indices are used, the value change will exactly decompose into a price index times a volume index only if the Laspeyres price index is matched with the Paasche volume index, that is: $L_P \times P_Q = I_V$ or the Laspeyres volume index is matched with the Paasche price index. For example, a price index, 1.05 representing a 5 per cent change multiplied by a volume index of 1.08, an 8 per cent change, yields a value change index of 1.134, a 13.4 per cent change.

Laspeyres and Paasche indices reflects the combined effects

18.23 This relationship can be exploited whenever the total current values for both periods are known and either a price or volume index is known. Suppose, for example, compilers want to derive a volume index. Laspeyres and Paasche volume indices are derived by dividing (deflating) the value change by appropriate price indices: $L_Q = I_V/P_P$ and $P_Q = I_V/L_P$ respectively. Note that L_Q from the right-hand side of equation (2) generates a time series of Laspeyres volume indices, for periods t = 1,…,*T* of:

$$\frac{\sum_{i=1}^{n} p_i^0 q_i^1}{\sum_{i=1}^{n} p_i^0 q_i^0}, \frac{\sum_{i=1}^{n} p_i^0 q_i^2}{\sum_{i=1}^{n} p_i^0 q_i^0}, \dots\dots\dots, \frac{\sum_{i=1}^{n} p_i^0 q_i^T}{\sum_{i=1}^{n} p_i^0 q_i^0} \qquad (5)$$

Multiplying through the series by the common denominator $\sum_{i=1}^{n} p_i^0 q_i^0$ yields the volume series:

$$\sum_{i=1}^{n} p_i^0 q_i^1, \sum_{i=1}^{n} p_i^0 q_i^2, \dots\dots\dots, \sum_{i=1}^{n} p_i^0 q_i^T \qquad (6)$$

The relative movements from period to period for this series are identical with those of the associated Laspeyres volume indices given by (5), the two series differing only by a scalar that is the value in period 0.

18.24 Series using the prices of a base year throughout, as illustrated by (6), are easy to understand but are not best practice in national accounts if the time period *T* is a lengthy one over which there are changes in the structure of the economy. For example, if volume changes are measured over a 10 year period, say 2010 to 2020, at constant 2010 prices, then the volume movements in later years are based on a price configuration that is likely to have changed. A better practice is to change the weights of (rebase) the Paasche deflator in 2015 and link the resulting index to the 2014 one. The resulting volume series over the 10 year period will no longer be at constant 2010 prices, but be a more representative volume index. Even better practice, resources permitting, is to form a series of annual bilateral links of constant price comparisons (see paragraphs 18.39 to 18.64). It is preferable to use the term volume series to describe such series rather than "in" or "at constant prices".

The relationship between Laspeyres and Paasche indices

18.25 Before considering other possible formulae, it is useful to establish the behaviour of Laspeyres and Paasche indices vis-à-vis each other. In general, a Laspeyres index tends to register a larger increase over the base year than a Paasche index, that is, in general:

both $L_P > P_P$ and $L_Q > P_Q$ (7)

It can be shown that relationship (7) holds whenever the price and quantity relatives (weighted by values) are negatively correlated, that is, as prices go up the quantities purchased go down or vice versa. Such negative correlation is to be expected for price takers, including consumers and firms purchasing intermediate inputs, who react to changes in relative prices by substituting goods and services that have become relatively less expensive for those that have become relatively more expensive. A positive

correlation would be expected for price setting firms that substitute output towards goods and services that have become relatively more expensive. In such circumstances the inequalities in equation (7) would be reversed.

18.26 Consumers are assumed to maximize utility, which in turn is related to combinations of goods and services purchased. Theoretical cost of living indices (COLIs) are defined as the ratio of the minimum expenditures required to enable a consumer to attain a fixed level of utility under the two sets of prices. The COLI increases if it becomes more expensive to maintain the same level of utility. A Laspeyres COLI would hold the preferences and utility fixed in the reference period and a Paasche COLI would hold them fixed in the current period.

18.27 The Laspeyres price index provides an upper bound to the theoretical Laspeyres COLI. Under the COLI, consumers can substitute products that have become relatively less expensive for ones that have become relatively more expensive to obtain the same level of utility, whereas the fixed basket Laspeyres index does not allow such substitution. Similarly, the Paasche index can be shown to provide a lower bound to the theoretical Paasche COLI.

Other index number formulae

18.28 Because different formulae give different results, a consideration of alternative approaches to choosing among them is needed and this in turn gives rise to a consideration of further index number formulae.

18.29 It is apparent from the Laspeyres and Paasche price indices in equations (1) and (3) that both indices hold the basket of quantities fixed. The formulae differ in that Laspeyres holds the basket fixed in the reference period and Paasche in the current period. If the objective is simply to measure the price change between the two periods considered in isolation, there is no reason to prefer the basket of the earlier period to that of the later period, or vice versa. Both baskets are equally justifiable from a conceptual point of view. Thus, although they yield different results, neither formula can be judged superior to the other.

18.30 A compromise solution for the price index is to use a formula that makes symmetric use of the base and current period information on quantities. The Fisher index can be shown to be the most suitable in this regard. (For an explanation of why this is so, see chapter 15 of the *PPI Manual*.) The Fisher index (F) is defined as the geometric mean of the Laspeyres and Paasche indices, that is, for price and quantity indices respectively:

$$F_P = \{L_P \times P_P\}^{1/2} \text{ and } F_Q = \{L_Q \times P_Q\}^{1/2} \qquad (8)$$

18.31 Economic theory postulates indifference curves that show how consumers would alter their expenditure patterns in response to changes in prices. Unless the utility functions the indifference curves represent are similar in periods 0 and *t*, a Laspeyres and a Paasche index for this period will each refer to a differently shaped utility function. In general, the Laspeyres index will provide an upper bound to its underlying utility function while the Paasche index will give a lower bound to its underlying utility function but the two utility functions will be different.

18.32 In order to resolve this dilemma, a series of indices called superlative indices have been derived that relate to utility functions that adapt over time to the changes in quantities brought about by changes in prices. The Fisher index is one example of a superlative index; a Törnqvist index is another example. A Törnqvist index is the geometric average of the price relatives weighted by average expenditure shares in two periods. Thus the Törnqvist price and volume indices are defined as:

$$T_P = \prod_{i=1}^{n} \left(\frac{p_i^t}{p_i^0}\right)^{(s_i^0 + s_i^t)/2} \quad and \quad T_Q = \prod_{i=1}^{n} \left(\frac{q_i^t}{q_i^0}\right)^{(s_i^0 + s_i^t)/2} \qquad (9)$$

Both Fisher and Törnqvist indices utilize and attach equal importance to information on the value shares in both periods for weighting purposes. For this reason they may be expected to lie between the bounds of Laspeyres and Paasche indices, as is desired. The difference between the numerical values of the Törnqvist and Fisher indices and other such symmetric indices is likely to be very small. Neither Törnqvist nor Fisher volume indices use the prices of a specific single period. The term “at constant prices” is a misnomer for such series; the correct term is a series in volume terms.

18.33 The above analysis has been from the consumer's or purchaser's perspective. Economic theory also defines Laspeyres and Paasche bounds from the producer's perspective. Revenue maximizing producers are expected to increase the relative quantities they produce in response to increases in relative prices. The resulting Laspeyres-Paasche bounds are the reverse of those described above, as quantities produced are substituted towards commodities with above average changes in prices. But the implication for removing substitution bias by the use of Törnqvist and Fisher indices still holds.

Desirable index number characteristics

18.34 There are two frequently quoted characteristics that it is felt index numbers for deflating national accounts should satisfy. These are the "time reversal" and "factor reversal" tests. The time reversal test requires that the index for period *t* compared with period 0 should be the reciprocal of that for period 0 compared with *t*. The factor reversal test requires that the product of the price index and the volume index should be equal to the proportionate change in the current values. It follows from the discussion in the preceding section that Laspeyres and Paasche indices on their own do not pass either of these tests. However, it follows from the definitions of Fisher indices in (8) that the Fisher index does pass these tests.

18.35 The Fisher index therefore has a number of attractions that have led it to be extensively used in general economic statistics. Indeed, Fisher described his index as "ideal". However, the Fisher index requires both reference and current period information for weights, which may affect the timeliness of the index, nor is it as easy to understand as Laspeyres or Paasche indices.

18.36 The *PPI Manual* provides in chapters 15, 16 and 17 an extensive account of the various approaches to choosing among index numbers. Also included in chapter 16 is the stochastic approach that favours the Törnqvist index. What is apparent from this extensive body of work is that all three approaches favour the Fisher index; that superlative indices such as the Fisher and Törnqvist indices produce very similar results and can all be justified from the economic theoretical approach and that the difference between superlative indices and the Laspeyres or Paasche indices, or their spread, is due to substitution bias.

Index numbers in practice

18.37 The Laspeyres price index in equation (1) has the same price and weight reference period 0. In practice, especially for CPIs where timeliness is of the essence, the price reference period 0 differs from the earlier weight reference period, say *b*, since it takes time to compile the results from the survey of households, establishments and other sources for the weights to use in the index. The Laspeyres index given by the first expression in equation (1) may have as its weights s_i^b instead of s_i^0 . This index is a Young index and, like the Laspeyres index, has the undesirable property of failing the time reversal test.

18.38 Statistical offices often try to overcome this by adjusting the value shares used as weights by the changes in prices between *b* and 0 to form a Lowe index given by:

$$Lowe_P = \frac{\sum_{i=1}^{n}\left(\frac{p_i^t}{p_i^0}\right)\left(\frac{p_i^0}{p_i^b}\right)v_i^b}{\sum_{i=0}^{n} v_i^b\left(\frac{p_i^0}{p_i^b}\right)} \equiv \frac{\sum_{i=1}^{n} p_i^t q_i^b}{\sum_{i=1}^{n} p_i^0 q_i^b} \qquad (10)$$

3. Chain indices

The rebasing and linking of indices

18.39 As noted in the previous section, over time the pattern of relative prices in the base period tends to become progressively less relevant to the economic situations of later periods to the point where it becomes unacceptable to continue using them to measure volume changes from one period to the next. It is then necessary to update the weights. With long time series, it is as inappropriate to use the most current weights for a date long in the past as it is to use the weights from a long time in the past for the current period. It is

therefore necessary to link the old series to the new reweighted series by multiplication. This is a simple numerical operation requiring estimates for an overlapping period of the index or series calculated using both the old and new weights.

18.40 The linking calculation can be undertaken in a number of ways. The current index on the new weights can be multiplied by a linking coefficient of the old to new index to convert the new index to the old index reference period. Alternatively, the index may have its reference period changed at the time of the introduction of new weights and the old index may be revised by dividing it by the linking coefficient. The process of linking an old series and a new one by means of a link for an overlap period is referred to as chaining. Numerical examples of linking and other chain index calculations are available in chapter 8 of the *Quarterly National Accounts Manual*.

18.41 Whether the chaining is done so as to preserve the earlier reference period in the new series or to change the reference period of the old series to the new one, the calculations have to be undertaken at each level of aggregation. Each component as well as each aggregate has to be linked individually because of non-additivity.

Chaining each period

18.42 The more frequently weights are updated the more representative will the resulting price or volume series be. Annual chain indices result from compiling annual indices over two consecutive years each with updated weights. These "links" are combined by successive multiplication to form a series. In order to understand the properties and behaviour of chain indices in general, it is necessary to establish first how chain Laspeyres and Paasche indices behave in comparison with fixed base indices.

Chain Laspeyres and Paasche indices

18.43 A chain Laspeyres volume index, L_Q, connecting periods 0 and t, is an index of the following form:

$$L_Q = \frac{\sum_{i=1}^{n} p_i^0 q_i^1}{\sum_{i=1}^{n} p_i^0 q_i^0} \times \frac{\sum_{i=1}^{n} p_i^1 q_i^2}{\sum_{i=1}^{n} p_i^1 q_i^1} \times \ldots, \frac{\sum_{i=1}^{n} p_i^{t-1} q_i^t}{\sum_{i=1}^{n} p_i^{t-1} q_i^{t-1}} \qquad (11a)$$

The corresponding chain Paasche volume index, P_Q, has the following form:

$$P_Q = \frac{\sum_{i=1}^{n} p_i^1 q_i^1}{\sum_{i=1}^{n} p_i^1 q_i^0} \times \frac{\sum_{i=1}^{n} p_i^2 q_i^2}{\sum_{i=1}^{n} p_i^2 q_i^1} \times \ldots, \frac{\sum_{i=1}^{n} p_i^t q_i^t}{\sum_{i=1}^{n} p_i^t q_i^{t-1}} \qquad (11b)$$

Laspeyres and Paasche price indices are obtained by interchanging the p's and q's in the expressions for the volume indices.

18.44 In general, if fixed base indices are replaced by chain indices, the index number spread between Laspeyres and Paasche is likely to be greatly reduced. Chain indices thus have an advantage over fixed base ones. The relationship between a fixed base index and the corresponding chain index is not always the same, however, as it depends upon the paths followed by individual prices and quantities over time.

18.45 If individual prices and quantities tend to increase or decrease steadily over time it can be shown that chaining will significantly reduce the index number spread, possibly almost eliminating it. Chapters 9 and 19 of the *PPI Manual* provides illustrative examples and chapter 15 explains the theory underlying these findings

18.46 On the other hand, if individual prices and quantities fluctuate so that the relative price and quantity changes occurring in earlier periods are reversed in later periods, chaining will produce worse results (in comparison with the Fisher index) than a simple index.

18.47 On balance, situations favourable to the use of chain Laspeyres and Paasche indices over time seem more likely than those that are unfavourable. The underlying economic forces that are responsible for the observed long-term changes in relative prices and quantities, such as technological progress and increasing incomes, do not often go into reverse. Hence, it is generally recommended that annual indices be chained. The price

and volume components of monthly and quarterly data are usually subject to much greater variation than their annual counterparts due to seasonality and short-term irregularities. Therefore, the advantages of chaining at these higher frequencies are less and chaining should definitely not be applied to seasonal data that are not adjusted for seasonal fluctuations.

Annually chained quarterly Laspeyres-type indices

18.48 Quarterly chain indices can be constructed that use annual weights rather than quarterly weights. Consider a quarterly Laspeyres-type volume index that measures the volume change from the average of year $y-1$ to quarter c in year y.

$$L_Q^{\overline{(y-1)}\rightarrow(c,y)} = \frac{\sum_i P_i^{y-1} q_i^{c,y}}{\sum_i P_i^{y-1} Q_i^{y-1}} = \sum_i \frac{q_i^{c,y}}{Q_i^{y-1}} s_i^{y-1} \qquad (12a)$$

The upper case letters P and Q denote average quarterly values over a year, while p and q denote specific quarterly values. The superscripts denote the year (y) and quarter (c). P_i^{y-1}denotes the average price of item i in year $y-1$ and $p_i^{c,y-1}$ denotes the price of item i in quarter c of year $y-1$ and s_i^{y-1} is the base period value share, that is the share of item i in the total value in year $y-1$.

Thus:

$$P_i^{y-1} = \frac{\sum_c p_i^{c,y-1} q_i^{c,y-1}}{\sum_i q_i^{c,y-1}} \; ; \; Q_i^{y-1} = \frac{\sum_c q_i^{c,y-1}}{4} \text{ ; and}$$

$$S_i^{y-1} = \frac{P_i^{y-1} Q_i^{y-1}}{\sum_i P_i^{y-1} Q_i^{y-1}} = \frac{\sum_c p_i^{c,y-1} q_i^{c,y-1}}{\sum_i \sum_c p_i^{c,y-1} q_i^{c,y-1}} \qquad (12b)$$

18.49 The quarterly Laspeyres-type volume indices can then be chained together with annual links. One of two alternative techniques for the annual chaining of quarterly data is usually applied, annual overlaps and one-quarter overlaps. In addition to these two conventional chaining techniques, a third technique sometimes is used based on changes from the same period in the previous year (the "over-the-year technique"). While in many cases all three techniques give similar results, in situations with strong changes in relative quantities and relative prices, the over-the-year technique can result in distorted seasonal patterns in the chained series. While standard price statistics compilation exclusively uses the one-quarter overlap technique, the annual overlap technique may be more practical for Laspeyres-type volume measures in the national accounts because it results in data that aggregate exactly to the corresponding direct annual index. In contrast, the one quarter overlap technique and the over-the-year technique do not result in data that aggregate exactly to the corresponding direct annual index. The one-quarter overlap provides the smoothest transition between each link in contrast to the annual overlap technique, which often introduces a step between each link, that is, between the fourth quarter of one year and the first quarter of the following year.

18.50 The technique of using annual overlaps implies compiling estimates for each quarter at the weighted annual average prices of the previous year, with subsequent linking using the corresponding annual data to provide linking factors to scale the quarterly data upward or downward. The technique of one-quarter overlaps requires compiling estimates for the overlap quarter at the weighted annual average prices of the current year in addition to estimates at the average prices of the previous year. The ratio between the estimates for the linking quarter at the average prices of the current year and at the average prices of the previous year then provides the linking factor to scale the quarterly data up or down. The over-the-year technique requires compiling estimates for each quarter at the weighted annual average prices of the current year in addition to estimates at the average prices of the previous year. The year-on-year changes in these volume series are then used to extrapolate the quarterly volume series of the chosen reference period.

18.51 Discrepancies between an annual chain volume series and the sum of the four quarters of an annually chained quarterly volume series derived using the one-quarter overlap technique can accumulate over time. Hence, quarterly chain volume series derived this way are usually benchmarked to the corresponding annual chain volume series using a procedure that minimizes the disturbance to the quarterly volume series whilst achieving consistency with the annual chain volume series. There is discussion on this in chapter 6 of the *Quarterly National Accounts Manual*.

18.52 If annual volume series are derived from data balanced in a supply and use table expressed in the prices of the previous year as recommended in section C, then it is standard practice to benchmark quarterly data to the corresponding annual balanced estimates. The benchmarking eliminates all discrepancies between the quarterly and annual chain volume series, including those arising from the use of the one-quarter overlap technique.

18.53 To conclude, chaining using the one-quarter overlap technique combined with benchmarking to remove any resulting discrepancies between the quarterly and annual data gives the best result. In many circumstances, however, the annual overlap technique may give similar results. The over-the-year technique should be avoided.

Chain Laspeyres or chain superlative indices?

18.54 As explained earlier, the index number spread between Laspeyres and Paasche indices may be greatly reduced by chaining when prices and quantities move smoothly over time. In such circumstances the choice of index number formula assumes less significance as all relevant index numbers lie within the bounds of the Laspeyres and Paasche indices. Nevertheless, there may still be some advantages to be gained by choosing an index for chaining, such as the Fisher or Törnqvist, that treats both periods being compared symmetrically.

18.55 Such indices are likely to approximate more closely the theoretical indices based on underlying utility or production functions even though chaining may reduce the extent of their advantages over their Laspeyres or Paasche counterparts in this respect. A chain symmetric index, such as Fisher or Törnqvist, is also likely to perform better when there are fluctuations in prices and quantities. Chain Laspeyres indices, however, do not require current period data for weights and thus may lead to more timely estimates. Retrospective studies of the difference in national accounts estimates from using chain Laspeyres as against chain Fisher or Törnqvist can help in determining the advantage of using the latter formulae.

Annually chained quarterly Fisher-type indices

18.56 Just as it is possible to derive annually chained Laspeyres-type quarterly indices, so it is possible to derive annually chained Fisher-type quarterly indices. For each pair of consecutive years Laspeyres-type and Paasche-type quarterly indices are constructed for the last two quarters of the first year, year $y-1$ and the first two quarters of the second year, year y. The Paasche-type quarterly indices are constructed as backward-looking Laspeyres-type quarterly indices and then inverted. This is done to ensure that the Fisher-type quarterly indices are derived symmetrically. In the forward-looking Laspeyres-type indices the annual value shares relate to the first of the two years, whereas in the backward-looking Laspeyres-type indices the annual value shares relate to the second of the two years.

$$L_Q^{\overline{(y-1)}\to c} = \frac{\sum_i P_i^{y-1} q_i^c}{\sum_i P_i^{y-1} Q_i^{y-1}} = \sum_i \frac{q_i^c}{Q_i^{y-1}} s_i^{y-1} \qquad (13)$$

$$P_Q^{\overline{y}\to c} = \left[L_Q^{\overline{y}\to c}\right]^{-1} \qquad (14a)$$

$$L_Q^{\overline{y}\to c} = \frac{\sum_i P_i^{y} q_i^c}{\sum_i P_i^{y} Q_i^{y}} = \sum_i \frac{q_i^c}{Q_i^{y}} s_i^{y} \qquad (14b)$$

and q_i^c is the quantity of item i in quarter c in the second two quarters of year $y-1$ or the first two quarters of year y.

18.57 For each of the four quarters a Fisher-type index is derived as the geometric mean of the corresponding Laspeyres-type and Paasche-type indices. Consecutive spans of four quarters can then be linked using the one-quarter overlap technique. The resulting annually chained Fisher-type quarterly indices need to be benchmarked to annual chain Fisher indices to achieve consistency with the annual estimates.

18.58 A difficulty arises at the end of the series because it is not possible to construct Paasche-type quarterly

indices that use annual weights for the current year, at least using actual observed data. One solution is to construct "true" quarterly chain Fisher indices for the latest year or two and use these to extrapolate the annually chained Fisher-type indices. But this should only be done using seasonally adjusted data. As long as the irregular variation in quarterly price and volume relativities is not very great, quarterly chain Fisher indices of seasonally adjusted data can be expected to produce satisfactory results in most circumstances.

Chaining and data coverage

18.59 One major practical problem in the construction of index numbers is the fact that products are continually disappearing from markets to be replaced by new products as a result of technological progress, new discoveries, changes in tastes and fashions, and catastrophes of one kind or another. Price and volume indices are compiled by comparing the prices or quantities of goods of the same characteristics or quality (that is, homogenous goods) over time. This is not easy in product areas such as personal computers, laptops, and mobile phones where quality changes rapidly.

18.60 Chaining helps ameliorate the problems of such constant quality comparisons since the likelihood of an overlap of a product in two consecutive price periods is almost bound to be greatest and the chain indices can accommodate the changes in weight that accompany a new and a disappearing product.

Additivity and chaining

18.61 An aggregate is defined as the sum of its components. Additivity in a national accounts context requires this identity to be preserved for a volume series. Although desirable from an accounting viewpoint, additivity is actually a very restrictive property. Laspeyres volume indices are the only index number formulae considered here that are additive.

18.62 A single link in a chain index is sufficient to destroy additivity even when additive indices, such as Laspeyres volume indices, are linked together. Consequently, if chain volume indices are converted into time series of values by using the indices to extrapolate the values of the base period, the index components may fail to add to aggregates in later periods. A perverse form of non-additivity can occur when the chain index for the aggregate lies outside the range spanned by the chain indices for its components, a result that may be regarded as intuitively unacceptable by many users. Whether published in monetary terms or indices, it is advisable to inform users that chain volume series are not additive.

18.63 There is a general tendency for the discrepancies from chaining to become larger the further a period is away from the reference year. If the reference year is chosen to be near the end of the series then the discrepancies will be relatively small for the latest quarters. Indeed, if the chain Laspeyres formula is used and if the reference year is chosen to coincide with the latest base year then the quarters following the reference year are additive. Another advantage of having the reference year near the end of chain volume series is that when they are expressed as monetary values their magnitudes do not differ greatly from the current values for the latest periods if price change is occurring at a modest rate. Maintaining this situation requires re-referencing the series every year when a new link is added to the chain and this entails revising the chain volume series for their entire lengths. Note that re-referencing entails revising levels but not growth rates.

18.64 Although additivity may be preserved by never undertaking a weight change this advantage is significantly outweighed by the disadvantage of increasing irrelevance of the weights in use. Rates of change for subperiods of a series, including annual rates, can be usefully phrased in terms of contributions to change, as explained below.

Variables that change sign

18.65 Index number formulae are generally not applicable to time series that can take positive, negative and zero values. Nevertheless, there are ways of deriving pseudo chain volume series expressed in terms of monetary values in such cases. The most commonly used approach is to identify two associated time series that take

only positive values and are such that when differenced yield the target series. An example is the stock of inventories at the start and the end of the period as opposed to the change during the period. Chain volume series are not additive and so it is evident that this is an imperfect method since by construction an additive relationship is produced. It follows that the series to be differenced should be as closely aligned in terms of price and volume composition as possible with the target series. Hence, a chain volume series of changes in inventories is derived as a chain volume series of closing inventories less a chain volume series of opening inventories. Sometimes public gross fixed capital formation can take negative values as a result of the sale of assets to the private sector, in which case the chain volume series of acquisitions and sales could be differenced.

Contributions to growth

18.66 When the Laspeyres formula is used and the base year and reference year coincide, the resulting volumes are additive in subsequent periods and the contribution by a component I_i to the growth of an aggregate, such as GDP, between two periods ($t-n$) and t can be obtained readily as follows:

$$\%\Delta_i^{(t-n)\rightarrow t} = \frac{100(I_i^t - I_i^{t-n})}{\sum_i I_i^{t-n}} \qquad (15)$$

When chain volume series are derived using either the Laspeyres formula for annual indices or the annual chaining of Laspeyres-type quarterly indices, then year-to-year or quarter-to-quarter contributions to growth can be derived easily using data expressed in the prices of the previous year prior to chaining. Such data are additive and so equation (15) can be used with n=1. If contributions to growth are not published by the national statistical office, the user can estimate them. Assuming the one-quarter overlap technique has been used, the formula for calculating the contribution to the percentage change from period $t-1$ to period t is:

$$\%\Delta_i^{(t-1)\rightarrow t} = \frac{100(I_i^t - I_i^{t-1})s_i^{t-1}}{\sum_i I_i^{t-1} s_i^{t-1}} \qquad (16)$$

where the s are the shares of the items in the total as in equations (12).

4. Causes of price variation

Price variation due to quality differences

18.67 In general, most types of goods or services, whether simple food products such as potatoes or high technology products such as computers and mobile phones, are available on the market in many different qualities whose physical characteristics differ from each other. For example, potatoes may be old or new, red or white, washed or unwashed, loose or pre-packed, graded or ungraded. Consumers recognize and appreciate the differences and are prepared to pay different prices. For some goods and services, such as computers, mobile phones and telecommunication services, there is a rapid turnover in the highly differentiated varieties and this, as considered below, creates severe problems for the measurement of price changes.

18.68 The same generic term, such as potato, computer or transportation is used to describe goods and services that differ from each other in their price-determining characteristics. The price or quantity of a good or service of one quality cannot be directly compared to that of a different quality. Different qualities have to be treated in exactly the same way as different kinds of goods or services.

18.69 Differences in quality may be attributable to differences in the physical characteristics of the goods or services concerned and be easily recognized, but not all differences in quality are of this kind. Goods or services delivered in different locations, or at different times, such as seasonal fruits and vegetables, must be treated as different qualities even if they are otherwise physically identical. The conditions of sale, or circumstances or environment in which the goods or services are supplied or delivered can make an important contribution to differences in quality. For example, a durable good sold with a guarantee, or free after-sales service is higher quality than the same good sold without guarantee or service. The same goods or services sold by different kinds of retailers, such as local shops, specialist shops, department stores or supermarkets may have to be treated as different qualities.

18.70 It is generally assumed in economic analysis that whenever a difference in price is found between two goods and services that appear to be physically identical there must be some other factor, such as location, timing or conditions of sale, that is introducing a difference in quality. Otherwise, it can be argued that the difference could not persist, as rational purchasers would always buy lower priced items and no sales would take place at higher prices.

18.71 When there is price variation for the same quality of good or service, the price relatives used for index number calculation should be defined as the ratio of the weighted average price of that good or service in the two periods, the weights being the relative quantities sold at each price. Suppose, for example, that a certain quantity of a particular good or service is sold at a lower price to a particular category of purchaser without any difference whatsoever in the nature of the good or service offered, location, timing or conditions of sale, or other factors. A subsequent decrease in the proportion sold at the lower price raises the average price paid by purchasers for quantities of a good or service whose quality is the same and remains unchanged, by assumption. It also raises the average price received by the seller without any change in quality. This must be recorded as a price and not a volume increase.

Price variation without quality differences

18.72 Nevertheless, it must be questioned whether the existence of observed price differences always implies corresponding differences in quality. There are strong assumptions underlying the standard argument which are seldom made explicit and are often not satisfied in practice: for example, that purchasers are well informed and that they are free to choose between goods and services offered at different prices.

18.73 In the first place, purchasers may not be properly informed about existing price differences and may therefore inadvertently buy at higher prices. While they may be expected to search for the lowest prices, costs are incurred in the process. Given the uncertainty and lack of information, the potential costs incurred by searching for outlets in which there is only a possibility that the same goods and services may be sold at lower prices may be greater than the potential savings, so that a rational purchaser may be prepared to accept the risk that he or she may not be buying at the lowest price. Situations in which the individual buyers or sellers negotiate, or bargain over prices, provide further examples in which purchasers may inadvertently buy at a higher price than may be found elsewhere. On the other hand, the difference between the average price of a good purchased in a market or bazaar in which individual purchasers bargain over the price and the price of the same good sold in a different type of retail outlet, such as a department store, should normally be treated as reflecting differences in quality attributable to the differing conditions under which the goods are sold.

Price discrimination

18.74 Secondly, purchasers may not be free to choose the price at which they purchase because the seller may be in a position to charge different prices to different categories of purchasers for identical goods and services sold under exactly the same circumstances, in other words, to practise price discrimination. Economic theory shows that sellers have an incentive to practise price discrimination as it enables them to increase their revenues and profits. However, it is difficult to discriminate when purchasers can re-trade amongst themselves, that is, when purchasers buying at the lowest prices can resell the goods to other purchasers. While most goods can be re-traded, it is usually impossible to re-trade services, and for this reason price discrimination is extensively practised in industries such as transportation, finance, business services, health, education, etc., in most countries. Lower prices are typically charged to purchasers with low incomes, or low average incomes, such as pensioners or students. When governments practise or encourage the practice of price discrimination it is usually justified on welfare grounds, but market producers also have reasons to discriminate in favour of households with low incomes as this may enable them to increase their profits. Thus, when different prices are charged to different consumers it is essential to establish whether or not there are in fact any quality differences associated with the lower prices. For example, if senior citizens, students or schoolchildren are charged lower fares for travelling on planes, trains or buses, at whatever time they choose to travel, this must be treated as pure price discrimination. However, if they are charged lower fares on condition that they travel only at certain times, typically off-peak times, they are being offered

lower quality transportation.

The existence of parallel markets

18.75 Thirdly, buyers may be unable to buy as much as they would like at a lower price because there is insufficient supply available at that price. This situation typically occurs when there are two parallel markets. There may be a primary, or official, market in which the quantities sold, and the prices at which they are sold, are subject to government or official control, while there may be a secondary market, either a free market or unofficial market, whose existence may or may not be recognized officially. If the quantities available at the price set in the official market are limited there may be excess demand so that supplies have to be allocated by rationing or some form of queuing. As a result, the price on the secondary or unofficial market will tend to be higher. It is also possible, but less likely, that lower prices are charged on the secondary or unofficial market, perhaps because the payment of taxes on products can be evaded in such a market.

18.76 For the three reasons just given, lack of information, price discrimination or the existence of parallel markets, identical goods or services may sometimes be sold to different purchasers at different prices. Thus, the existence of different prices does not always reflect corresponding differences in the qualities of the goods or services sold.

18.77 When there is price variation for the same quality of good or service, the price relatives used for index number calculation should be defined as the ratio of the weighted average price of that good or service in the two periods, the weights being the relative quantities sold at each price. Suppose, for example, that a certain quantity of a particular good or service is sold at a lower price to a particular category of purchaser without any difference whatsoever in the nature of the good or service offered, location, timing or conditions of sale, or other factors. A subsequent decrease in the proportion sold at the lower price raises the average price paid by purchasers for quantities of a good or service whose quality is the same and remains unchanged, by assumption. It also raises the average price received by the seller without any change in quality. This must be recorded as a price and not a volume increase.

18.78 It may be difficult to distinguish genuine price discrimination from situations in which the different prices reflect differences in quality. Nevertheless, there may be situations in which large producers (especially large service producers in fields such as transportation, education or health) are able to make the distinction and provide the necessary information. If there is doubt as to whether the price differences constitute price discrimination, it seems preferable to assume that they reflect quality differences, as they have always been assumed to do so in the past.

5. The measurement of changes in quality over time

18.79 Goods and services and the conditions under which they are marketed are continually changing over time, with some goods or services disappearing from the market and new qualities or new goods or services replacing them. National accountants use disaggregated price indices to deflate changes in consumption, production and investment values as the principle means of determining volume changes in such aggregates. Deficiencies in price indices carry over to estimates of volume changes. For example, estimates of price indices for computers that do not fully incorporate the increases in quality over time will overstate price changes and understate volume changes. National accountants need to be aware of the extent and nature of methods used by price compilers to take account of such quality changes, if they are to use them properly as deflators. This in turn requires that price compilers keep explanatory notes on such methods used, a policy advocated by chapter 7 of the *CPI Manual* and chapter 8 of the *PPI Manual*.

18.80 There are, of course, costs associated with implementing quality adjustment procedures tailored to the specific product groups. What is important for national accountants and price index compilers to appreciate is that quality change is an increasing feature of product markets. The default procedures of dealing with quality change, specifically by treating all replacements as comparable, or dropping varieties from the sample if missing, implicitly incorporate valuations of quality differences. Such valuations are unlikely to be appropriate and improvements can and should be made.

18.81 An unfortunate common procedure to deal with missing values is to carry forward the price from the

previous period into the current period. This may well bias the index and is strongly discouraged.

18.82 A brief overview of some of the more common techniques follows. More extensive discussion can be found in all the three price manuals, those for CPI, PPI and XMPI. The techniques can be divided into those that are direct or explicit methods and those that are indirect or implicit.

Direct methods

18.83 In principle, the price relatives that enter into the calculation of inter-temporal price indices should measure pure price changes by comparing the prices of a representative sample of identical goods and services in different time periods. This is called the matched-models method. Price index compilers maintain detailed product descriptions of the items being priced in successive periods to ensure proper matching. When a model is missing because it is obsolete, a problem of quality adjustment arises. A number of methods can be used to take account of the quality change in order to continue the series.

18.84 One possibility is to use the estimated relative costs of production as the basis for estimates of their relative prices and hence their relative qualities. It may often be feasible for producers to provide such estimates. If, however, the new quality feature was available as an option in the previous period, but now is a standard feature, the estimate of the valuation of the quality change may be based on the (relative) price of this option.

18.85 An extension of the costs of production approach is known as model pricing. It is often applied to products made to order. A particular case in point is measuring building costs. The characteristics of buildings and other structures are so variable that it may be almost impossible to find identical buildings and structures being produced in successive periods of time. In these circumstances, a small number of hypothetical and relatively simple standard buildings and structures may be specified and their prices estimated in each of the periods. The specifications of these standard buildings or structures are chosen on the advice of construction experts who are also asked to estimate what their prices would be in each of the periods. Model pricing for services is described in *Methodological Guide for Developing Producer Price Indices for Services* (Eurostat and the Organisation for Economic Co-operation and Development, 2005).

Hedonics

18.86 A more general and powerful method of dealing with changes in quality is to make use of estimates from hedonic regression equations. Hedonic regression equations relate the observed market prices of different models to measurable price-determining characteristics. Provided a sufficient number of differentiated models are on sale at the same time, the estimated regression equation can be used to determine by how much prices vary in relation to each of the characteristics or to predict the prices of models with different mixes of characteristics that are not actually on sale in the period in question.

18.87 Hedonic regression equations have been estimated for high technology goods such as computers and electronic goods and for services such as air transportation. The technique has also been used for housing by regressing house prices (or rentals) on characteristics such as area of floor space, number of rooms or location. The method has been used not only for inter-temporal price measurements for goods but also for services in the index.

18.88 The hedonic approach is most useful when the market does not directly reveal the price and quality characteristics, but they can be inferred from prices of many varieties with different characteristics. To implement the hedonic approach, one needs to compile a data set consisting of prices and characteristics for many varieties. A sufficiently large data set with substantial variability in the mix of characteristics allows the hedonic regression to produce estimates of the implicit prices of the characteristics. For example, extensive data on the prices and characteristics of varieties of consumer goods can often be collected from the websites of retailers with relative ease.

18.89 The hedonic regression is usually conducted using a semilogarithmic form. That is, the logarithm of the price of a variety in the sample is regressed against a standard set of characteristics, $z_1, z_2, \ldots, z_k$, given by

$$\ln p = \beta_0 + z_1 \beta_1 + z_2 \beta_2 + z_3 \beta_3 + \ldots + z_k \beta_k + \varepsilon \qquad (17)$$

where ε is an error term that is assumed to satisfy the standard set of assumptions used in regression analysis. For the semilogarithmic form, logarithms are taken only of the left-hand side variable (that is, p or price). Each of the characteristics, z, enters the equation without taking logarithm (though it is possible for the analyst to take logarithms if it would provide a better fit). The semilogarithmic form allows the use of indicator variables (or dummy variables) that take a value of one if the variety has a feature and zero if it does not. The coefficients, β, can be interpreted as the percentage or proportional change in the price associated with a one-unit change in the characteristic.

18.90 There are two ways in which hedonic quality adjustments can be applied to the estimation of price indexes. The first way is described as "patching" and is a way of dealing with non-comparable product substitutions in the matched-model method. It involves making an explicit quality adjustment to the price of an old variety that has dropped out of a sample to make it comparable to the new variety that has replaced it. The second way is a more comprehensive process that is used for rapidly changing products that are experiencing substantial changes in quality within relatively short periods. That process, known as hedonic price indices, requires a sample to be drawn in each period and controls for quality differences in the hedonic regression. Hedonic price indices are discussed in the *CPI Manual 2020*, paragraphs 6.136 to 6.223.

Table 18.1: Hedonic regression imputation of new variety's price

Variety/ Period	t	$t+1$	$t+2$	$t+3$	$t+4$
l	p_l^t	p_l^{t+1}	p_l^{t+2}	p_l^{t+3}	p_l^{t+4}
m	p_m^t	p_m^{t+1}	p_m^{t+2}		
n			$\check{p}_n^{t+2}$	p_n^{t+3}	p_n^{t+4}

18.91 Consider the sample for a matched model index in table 18.1 where variety l is available in all periods, the "old" variety m is only available in periods t, $t+1$, and $t+2$, and the replacement variety n is only available in periods $t+3$ and $t+4$. Variety m's replacement n is non-comparable, so p_m^{t+2} cannot be directly compared with p_n^{t+3}. The hedonic *imputation* approach would predict the price of variety n in period $t+2$ using a hedonic regression estimated in period $t+2$ and the characteristics of the new variety n from period $t+3$. Alternatively, if data are not available to support estimation of regression coefficients each period, an alternative approach would be the hedonic quality-adjustment method.

18.92 The compilers of price indices should consider the limitations and challenges of implementing the hedonic approach:

a. The hedonic approach requires staff to possess sufficient expertise and understanding of regression methodology to interpret the results and diagnostic statistics of the models.

b. The estimated coefficients require regular updating, which entails updating of the data sets used to prepare estimates and updating of the estimates themselves.

c. The sample of prices and characteristics used for the hedonic adjustments need to be representative of markets during the period that the adjustments are applied.

d. The functional form and choice of variables to include in the model need to be carefully considered.

e. The resources required for gathering and maintaining the data for estimating the hedonic regressions should be considered.

f. The staff resources required for devising the specification, estimation and validation of the hedonic model and its regular updating should be considered.

Indirect methods

18.93 When the two qualities are not produced and sold on the market at the same time it becomes necessary to

resort to indirect methods of quantifying the change in quality between the old and new qualities. In such cases it is necessary to estimate what would be the relative prices of the old and new models, or qualities, if they were produced and sold on the market at the same time and to use the estimated relative prices to determine measures of the relative qualities.

18.94 When a model is missing a replacement of a comparable quality may be found and the price comparisons continued. If there is no comparable replacement, the price in the missing period may be imputed using the measured price changes of a product group expected to experience similar price changes. Dropping the product from the calculation is equivalent to an imputation that assumes the price change for the missing model would follow those of all goods and services in the index. The assumptions behind such imputations are less soundly based than those behind the more targeted imputation. In either case, items subject to quality change tend to be atypical and unrepresentative, so that assuming that their prices change at the same rate as for goods or services whose characteristics do not change is questionable.

18.95 If the replacement model is not directly comparable in quality, then the price change of the new model may be readily linked to the price series of the old one if the two models are for sale in the market at the same time, in an overlap period. The implicit assumption is that the difference in prices at the time of the overlap link is a good valuation of the difference in quality, an assumption that will not be valid if the overlap period is at an unusual point in time in the model's life cycle, for example when it is about to become obsolete and discontinued or has just been introduced at an unusually high price to obtain temporary monopoly profits in a segmented market.

Rapidly changing differentiated product markets

18.96 Problems of adjusting price changes for changes in quality in product markets with a rapid turnover of differentiated varieties require special consideration. The matched model method breaks down. Models of like quality can only be compared over relatively short periods and are not representative of the overall market. The summation in index number formulae such as the Laspeyres price index in equation (1) is misleading since in period t the n items produced or consumed may be quite different from those on the market in period 0.

18.97 Price index number compilers use a short-run formulation to ameliorate the difficulties of comparing the prices of like with like when there is a rapid turnover in differentiated goods and services. A Laspeyres price index, for example, comparing prices in period 0 and t, is given as:

$$L_P = \frac{\sum_{i=1}^{n} p_i^0 q_i^0 \left(\frac{p_i^{t-1}}{p_i^0}\right)\left(\frac{p_i^t}{p_i^{t-1}}\right)}{\sum_{i=1}^{n} p_i^0 q_i^0} \qquad (18)$$

18.98 If a new type of good, for example a digital camera, is introduced in period $t-1$ to replace a non-digital one, then the compiler has only to wait for the good to be on the market for two successive periods before it can be included in the index. This provides a mechanism for changing the representative items to include the new, higher quality, item within a product category that has an assigned weight. Additional weighting information may be required to augment the weighting given to cameras within the wider group. However, a chain formulation in which weights are regularly updated would be a better mechanism to achieve this.

18.99 While a chain index with a short-run formulation such as in equation (18) will ameliorate the measurement problem in markets with a rapid turnover of differentiated varieties, it cannot take account of the effect on the overall price change from period $t-1$ to period t of the new variety introduced in period t and of the old model that was dropped in period$t-1$. Two successive price quotes are required to implement the formula in (18) and a chain index. Hedonic indices are a means of incorporating such effects. They can take a number of forms, but essentially the prices and values of price-determining quality characteristics, say the speed, RAM, etc. of different varieties of computers are collected in each period. A Paasche-type hedonic imputation (or characteristics) price index would be derived by first estimating a hedonic regression of price on quality variables based on period $t-1$ data and then using the estimated coefficients to impute for $t-1$ the prices of the varieties available in period t, including those not available in$t-1$. Prices for period t characteristics valued at period t prices can be directly compared with the estimated period $t-1$ valuation of

period t characteristics to yield a Paasche-type price index. A Laspeyres-type hedonic index can be similarly defined using an estimated period t regression and constant period $t-1$ characteristics set, as can a Fisher-type hedonic index as a geometric mean of the two. An alternative formulation is to pool the two sets of observations in periods 0 and t and include a dummy variable in the hedonic regression equation to distinguish observations in one period from those in the other. The coefficient on the dummy variable would be an estimate of the price change between the two periods having controlled for the effect of quality changes.

Further elaboration

18.100 A detailed account of all the methods referred to above is available in chapters 6 and 7 of the *CPI Manual* and chapters 7 and 8 of the *PPI Manual*. These chapters include the use of imputations, overlap prices, comparable replacements, non-comparable replacements using estimates from production costs, option costs and hedonic regressions, as well as methods for markets with a rapid turnover of differentiated varieties including short-run relatives, chaining, product augmentation and hedonic indices.

18.101 Further discussion of this topic can also be found in the *Handbook on hedonic indices and quality adjustments in price indexes: special application to information technology products* (OECD, 2004).

6. Practical advantages of compiling chain indices

18.102 It has been shown on theoretical grounds that long time series of volume and price indices are best derived by being chained. The question is how often in the time series should a link occur. It has been argued that annual chaining is generally best on theoretical grounds, but what of the practicalities? There are a number of matters to consider, including data requirements, computing requirements, human resource requirements, loss of additivity, revisions and informing users.

a. If annual current values and corresponding volume or price data are available, then annual chaining is possible. No other data are required.

b. The computing requirements of deriving annual chain indices are greater than those for fixed-weighted Laspeyres-type indices and should not be attempted without adequate, tailored software, though improvements in the computational capacity of software used for compilation have made this objection far less important.

c. Experience has shown that if the benefits of chain volume measures, along with the loss of additivity, are carefully explained to users via documentation and seminars before their introduction, chain volume measures are generally accepted. Particular attention should be given to informing the key users, including economic journalists, well beforehand.

d. When volume estimates are rebased, say every five or ten years, without chaining annually then it is typically the case that the growth rates are revised. If price and volume relativities have been changing rapidly, then the changes in the growth rates can be dramatic. Such is usually the case for any aggregate in which products with fast technological advances have a significant share. With annual chaining history is only "rewritten" a little each year, not in one large jump every five or ten years. Not surprisingly, the sort of big revisions associated with chaining only every five or ten years can have a detrimental effect on user confidence in the national accounts, not least because users learn they can expect similar revisions in the future. Annual chaining not only measures changes better, it is likely to increase confidence in the resulting national accounts volume indices.

C. Derivation of volume measures in the national accounts

1. Introduction

18.103 This section is concerned with the application of the theory described in section B to the practice of deriving volume measures of parts of the integrated framework of the SNA. The parts concerned are primarily the

components of the goods and services account. Ideally this should be done within the context of supply and use tables, as explained below. Just as flows of capital formation can be expressed in volume terms, so can stocks of non-produced assets. It is not considered possible to separate all income flows into price and volume components but some limited measures of real income are possible, as also explained below.

18.104 The ideal way of producing volume estimates of macroeconomic aggregates is to work at a very detailed level, deflating each component by a strictly appropriate price index. There are cases, though, where this approach is not possible; either appropriate price indices do not exist, or there may be inconsistencies in the current value data or the price indices, that make the results of deflation questionable. In such cases, alternative approaches must be considered including the possibility of projecting (or extrapolating) forward estimates for earlier years or using alternative indicators of the volume growth in a particular case.

18.105 Once a set of volume measures is available for a given period, it needs to be presented with data for other periods in time series form. This is when chaining should be introduced for data derived by deflation of individual components. As recommended in section B, this should ideally be done annually using price indices of the previous year but if this is not possible, chaining over a longer period should be adopted. Major changes in economic structure, such as the impact of rapid fluctuations in oil prices on an oil exporting economy, indicate that using the same base year before and after the change is likely to give quite misleading indications of the evolution of the economy. Chaining becomes essential rather than just desirable in such cases.

Terminology for volume estimates

18.106 When time series are constructed by dividing the current values for each year at the most detailed level possible by fixed base year Laspeyres price indices, it is appropriate to describe the resulting series as being at the constant prices of the base year. (This is because as long as the work is done at a sufficiently detailed level, the result approximates using a Paasche price index.) However, when each year's value is deflated by a price index with a different base year, it is no longer strictly correct to describe the resulting time series in this way. More accurate terms are "chain volume series", "chain volume measure" or "chain volume index" if the series is expressed in index number form. If it is desirable to specify the reference year in the term, then "chain volume series in reference year (currency units)" may be used.

18.107 The use of the term "at constant prices" is also inappropriate for series that are linked less frequently than annually and to volume series based on the use of Fisher or Törnqvist formulae, whose price configurations are not constant over the duration of the series. For such series the terms "volume series" or "volume index" are appropriate to describe a series or index.

18.108 The terminology also reflects the lack of additivity of the resulting time series since only series expressed in the same set of prices throughout, for example by using Laspeyres indices, are additive.

2. Price deflation versus quantity revaluation

18.109 Volume and price indices can only be derived for variables that have price and quantity elements. All transactions involving the exchange of goods and services and the levels of stocks of non-financial assets have this characteristic but income flows and financial assets and liabilities do not. Some balancing items have the characteristic but others do not and so they need to be considered individually.

18.110 While both volume and price measures are of major importance in the national accounts, the principal focus of users is on the growth rates of volume measures, rather than prices. The compilation of the national accounts in volume and current value terms reflects this priority, with the price aggregates being derived implicitly, by dividing the current values by the corresponding volumes.

18.111 When independent, reliable and comprehensive data are available at current values it is generally not necessary to construct volume measures by aggregating quantity relatives. In most cases it is preferable and more practicable to use price indices to deflate current value data. Even for cases like electricity where the volume measure seems to be easily available, a direct volume measure is inappropriate because of the treatment of prices applying in different markets as explained in paragraphs 18.72 to 18.78. A change in the

composition of the type of user leads to a change in the price and volume of electricity in the integrated framework of the SNA even though the physical measure of electricity distributed may not have changed.

18.112 As explained in section B, price information is easier to collect and aggregate than volume information because all prices are expressed in a common unit whereas volumes come in a multitude of units. Further, price relatives for a representative sample of goods and services can be used as typical for all goods and services in the same group in a way that volume measures would not be representative. More importantly, the volume changes associated with new and disappearing products can be properly reflected when current values are deflated by price indices as described in section B.

18.113 For some products, for example closely specified agricultural products or minerals, it may be that the current value data have been constructed by multiplying a volume measure by an appropriate price. These are instances when there is no aggregation problem across the group of products and adjustments for quality differences are more easily and more satisfactorily made to the volume measures directly. While some such products may be of significant value in some countries, it will be a small number of the total number of products that can best be treated in this way.

18.114 To obtain a Laspeyres volume measure the appropriate price index used to deflate the current value is a Paasche index and vice versa. However, the available price indices are nearly always constructed using the Laspeyres or Lowe formulae, because construction of a Paasche price index has exactly the same data requirements as the direct derivation of a Laspeyres volume index and faces the same problems. If robust current value data and Laspeyres price indices are available at a sufficiently detailed level then Paasche volume indices, at the detailed level, can be aggregated using the Laspeyres formula to obtain an approximation of a true Laspeyres volume measure of the aggregate.

18.115 A Fisher volume index can be obtained either by taking the geometric mean of Laspeyres and Paasche volume indices or by deflating an index of the current values by a Fisher price index.

3. Available price indices

18.116 There are four major types of price index available to derive volume measures in the national accounts: consumer price indices (CPIs), producer price indices (PPIs), export price indices (XPIs) and import price indices (MPIs). CPIs are measures of purchasers' prices and PPIs are measures of basic prices. XPIs are measures of FOB prices; MPIs may measure FOB or CIF prices.

18.117 There are two defining aspects of recording transactions: timing and valuation. It is therefore critical that the price indices and the current values they are used to deflate correspond in both these aspects, as well as scope. The four types of price indices are usually available monthly and so quarterly and annual deflators can be obtained for flow and stock variables by averaging the monthly indices appropriately to centre the average at the desired valuation point. For flow variables this is usually the mid-point of the period, while for stock variables it is usually, but not always, the end of the period. For flow variables, the average price of the period should reflect known variations within the period. This is particularly important when there is a strong seasonal pattern, large irregular movements in certain months or hyperinflation. When none of these factors is present, the average price will be close to the observed price at the middle of the time period. The fact that this is frequently the case does not imply that the midperiod price is always the conceptually correct one to take, however.

4. The supply and use tables as the basis for volume measures of GDP

18.118 Chapter 15 describes the supply and use tables. It explains how the supply table itemizes the products each industry produces which are then identified in the use table where the allocation of each product between intermediate consumption and final demand is spelled out. Compiling supply and use tables at current values ensures consistency in the different measures of GDP. More powerfully, compiling supply and use tables in volume terms ensures that both the volumes and prices in the integrated framework of the SNA are consistent. In principle, tables at current values and in volume terms should be compiled at the same time in order to make the best use of all the information available to the compiler.

18.119 It is often the case that not all the detailed data required for compiling supply and use tables are available each period and estimates have to be made to fill the empty cells. For example, detailed data for intermediate consumption by product and industry are often collected infrequently. It is generally better to make an initial assumption of a constant composition of intermediate inputs over time in volume terms than in current values. Furthermore, adjustments to the raw and estimated data can be greatly assisted by evaluating growth rates in prices and volumes from the previous or following period. For these reasons it is recommended that supply and use tables should be compiled at current values and in volume terms at the same time and balanced simultaneously.

18.120 In order to derive a set of supply and use tables in volume terms that are additive, the appropriate way to proceed is first to express the table in the prices of the previous year, that is, as Laspeyres volume indices linking the previous year to the current year, referenced to the values in the previous year. In order to obtain annual chain Fisher volume measures, it also necessary to derive supply and use tables of the previous year in the prices of the current year. Such values are in effect backward-looking Laspeyres indices referenced to the prices of the current year. Paasche volume indices are obtained by taking the inverse of the backward-looking Laspeyres indices. Fisher volume indices can then be derived as the geometric mean of the Laspeyres and Paasche volume indices between two adjacent years.

5. Volume measures of the output estimate of GDP

Market output

18.121 In principle, PPIs can be compiled for all market output and then they can be used to deflate current values to obtain volume estimates.

18.122 In practice, there are some products for which it is very difficult to derive price indices and special steps must be taken to derive the corresponding volume measures. A particular case is those of margin industries including financial services. Output of a margin industry is usually calculated as the margin rate times the value of a transaction. To determine a volume figure the base year rate is applied to the value of the transaction suitably deflated to base year values. As explained in section E of this chapter, in the case of implicit financial services on loans and deposits, the reference rate and the rates of bank interest are used in conjunction with figures of loans and deposits deflated by the general price increase since the base year.

18.123 In other cases where there is no suitable deflator to apply to a current value, volume indices may be derived by extrapolating the current values in the base period by suitable indicators.

Non-market output of government, the central bank and NPISHs

18.124 The current value of the output of non-market goods and services produced by government units, the central bank or NPISHs is estimated on the basis of the sum of costs incurred in their production, as explained in chapter 7 on Production account. This output consists of individual goods and services delivered to households and collective services provided to the community as a whole. The fact that such output is valued on the basis of the value of inputs needed to produce them does not mean that it cannot be distinguished from the inputs used to produce it. In particular, the change in the volume of output can be different from the change in the volume of inputs. Changes in productivity may occur in all fields of production, including the production of non-market services.

18.125 In practice, there are three possible methods of compiling volume estimates of the output of non-market goods and services. The first is to derive a pseudo output price index such that when it is compared to the aggregate input price index the difference reflects the productivity growth thought to be occurring in the production process. Pseudo output price indices can be derived in various ways, such as by adjusting the input price index according to the observed productivity growth of a related production process or by basing the growth of the pseudo output price index on the observed output price indices of similar products. However, such data are rarely available for the goods and services produced by government, the central bank and NPISHs.

18.126 The second approach, the “output volume method,” is recommended for individual services, in particular,

health and education. It is based on the calculation of a volume indicator of output using adequately weighted measures of output of the various categories of non-market goods and services produced. These measures of output should fully reflect changes in both quantity and quality.

18.127 The third approach, called the "input method", may be used for collective services such as defence for which the "output volume method" is hardly applicable because there are, in general, no adequate quality-adjusted quantity measures of output. The "input method" consists of measuring changes in output by changes in the weighted sum of volume measures of all the inputs. The latter should fully reflect both changes in quantity and quality. They are generally best derived by deflating the various input costs by corresponding constant-quality price indices, or when such price indices are unavailable, using volume indicators that reflect input volume change (for example, number of hours worked by employees).

18.128 It is useful at this stage to define the terms input, activity, output and outcome. Taking health services as an example, input is defined as the labour input of medical and non-medical staff, the drugs, the electricity and other inputs purchased and the depreciation of the equipment and buildings used. These resources are used in the activity of primary care and in hospital activities, such as a general practitioner making an examination, the carrying out of a heart operation and other activities designed to benefit the individual patient. The benefits to the patient constitute the output associated with these input activities. Finally there is the health outcome, which may depend on a number of factors apart from the output of health care, such as whether or not the person gives up smoking.

18.129 The measurement of the volume of output of non-market individual services should avoid two pitfalls. The first of these is that it should not be restricted to reflect the inputs or the activity of the unit producing the services. Inputs are not an appropriate measure and while activities may be the only available indicator and hence have to be used, they too are an intermediate variable. What should be measured is the service rendered to the customer. The second risk is that if outcome is defined in terms of the welfare objectives of the non-market service (for example, changes in the quality of health for the measurement of the health service, or changes in the quality of education for the measurement of the education service) the change in the volume of the output of the non-market unit cannot be reflected by the change in the indicators of outcome. This is because indicators of outcome can be affected by other aspects that are not directly related to the activity of the non-market services. For example, in the case of health, it is well-known that there are many factors other than the output of the non-market health units, such as sanitation, housing, nutrition, education, consumption of tobacco, alcohol and drugs, pollution, whose collective impact on the health of the community may be far greater than that of the provision of health services. Similarly, the output of education services is quite different from the level of knowledge or skills possessed by members of the community. Education services consist principally of teaching provided by schools, colleges, universities to the pupils and students who consume such services. The level of knowledge or skills in the community depends in addition on other factors, such as the amount of study or effort made by consumers of education services and their attitudes and motivation.

18.130 In the light of these observations, the "output volume method" is the recommended method for compiling indicators of volume change of non-market services. The method is based on quantity indicators, adequately quality-adjusted, weighted together using average cost weights. Two criteria should be respected to compile adequate indicators of volume change. In the first place, the quantities and costs used should reflect the full range of services for the functional area under review and cost weights should be updated regularly. If part of the costs of the functional area is not covered by the quantity indicator, it should not be assumed that the uncovered part follows the changes of the part that is covered. If no direct output volume method is applicable for this part, an input method should be used for it. Secondly, quantity indicators should be adjusted for quality change. For example, services should be sufficiently differentiated with the aim of arriving at categories that can be regarded as homogeneous. An aspect of quality change is then captured by changes in the proportions of different categories if the weights assigned to each category are frequently updated. In addition, the quantity indicator of each category can be augmented by an explicit quality adjustment factor. One way of identifying explicit quality adjustment factors is by reviewing the effects that the service has on measures of outcome. When feasible, direct volume measures should be preferred for individual non-market services as described in the *Handbook on prices and volume measures in national accounts* (Eurostat, 2016) or the handbook *Towards measuring the volume of health and education and services* (Organisation for Economic Co-operation and Development, 2009). Compilers should take account that quite some progress has been made to derive volume estimates of output, especially for education and

health, that take account of changes in the quality as well as the quantity of the services provided.

18.131 It is recommended these volume indicators be tested with the aid of experts in the domain prior to their incorporation in the national accounts, and the impacts fully assessed, in line with other revisions.

18.132 Measuring changes in the volume of collective services is generally more difficult than measuring the volume changes in individual services because the former are hard to define and to observe. One reason is that many collective services are preventative in nature, protecting households or other institutional units from acts of violence including acts of war, or protecting them from other hazards, such as road accidents, pollution, fire, theft or avoidable diseases, and thus are concepts that are difficult to translate into quantitative measures. This is an area in which further research is needed.

18.133 When it is not possible to avoid using an input measure as a proxy for an output measure, the input measure should be a comprehensive one, it should not be confined to labour inputs but cover all inputs. In addition, explanatory information should accompany the national estimates that draw users' attention to the methods of measurement.

Output for own final use

18.134 Output for own final use in the integrated framework of the SNA falls into two categories, goods produced and consumed by households and fixed assets produced for own use. Included in the above are changes in inventories of finished goods and work-in-progress.

18.135 For most output for own final use the use of pseudo output price indices is an effective, low-cost option. For goods produced and consumed by households, CPIs are likely to be available for similar goods. (However, for agricultural output grown and consumed by households, the price index used should not include any margins or taxes not actually incurred.) Similarly, there are likely to be output price indices available for fixed assets such as equipment, buildings and structures produced for own use as capital formation. For some types of fixed asset produced on own account there may be no output price indices available for similar products and different strategies may need to be considered. This is discussed further in the section on gross fixed capital formation.

Intermediate consumption

18.136 As noted earlier, the most robust way of estimating intermediate consumption in volume terms is within the framework of a supply and use table in volume terms where information on volume growth rates as well as price information may be used.

18.137 Countries that compile PPIs generally do so for outputs, though countries with developed statistical systems may also compile input PPIs. Such input PPIs are directly applicable to the deflation of intermediate consumption.

18.138 If input PPIs are not compiled, output PPIs, MPIs and, to a limited extent, CPIs may be used instead. Intermediate consumption is valued at purchasers' prices, while output PPIs are valued at basic prices. There is thus a margin between the valuation of goods used as intermediate consumption at purchasers' prices and output PPIs, which is accounted for by transportation costs (unless the producer provides these services without a separate invoice), possible insurance costs, distribution margins related to wholesale and retail trade and taxes less subsidies on products. The size of this margin will depend on circumstances. Often trade margins on goods for intermediate consumption are much smaller than for final consumption and the taxes may be smaller under a VAT system. For services used as intermediate consumption, the difference in valuation usually consists of only taxes less subsidies on products.

18.139 Chapter 15 on Supply and use tables describes how the intermediate consumption part of the use matrix can be partitioned to show the domestic inputs at basic prices, imports, margins and taxes separately. If this information is available, the quality of the resulting deflation exercise will be improved since it will not be necessary to use the assumption that import, tax and margin proportions apply uniformly across the elements of the rows of the use matrix.

Gross domestic product and gross value added

18.140 When gross domestic product (GDP) is derived by summing final domestic expenditures and exports and subtracting imports, or by subtracting intermediate consumption from output and adding taxes less subsidies on products, volume measures of GDP can be obtained provided that the volumes being aggregated are additive (that is, are based on the Laspeyres formula).

18.141 Central to the production measure of GDP is value added, the balancing item in the production account. The most common practice is to deflate the values of output and intermediate consumption independently, industry by industry, and then derive the difference as value added for each industry. (This is known as the double deflation method.) Different price indices are necessary for two reasons. The first is because the goods and services included in intermediate consumption for any industry are not the same as the output of that industry. The second reason is that intermediate inputs are always measured at purchasers' prices whereas output is measured at either basic prices or producers' prices.

18.142 The gross value added of an establishment, enterprise, industry or sector is measured by the amount by which the value of the outputs produced by that establishment, enterprise, industry or sector exceeds the value of the intermediate inputs consumed. This may be written as:

$$\sum PQ - \sum pq \qquad (19a)$$

where the Q's refer to outputs, P's their basic prices, q's to intermediate inputs and p's their purchasers' prices. Value added in year t at prices of year t is given by:

$$\sum P^t Q^t - \sum p^t q^t \qquad (19b)$$

while value added in year t at the prices of the base year, 0, is given by:

$$\sum P^0 Q^t - \sum p^0 q^t \qquad (19c)$$

This measure of value added is generally described as being obtained by "double deflation" as it can be obtained by deflating the current value of output by an appropriate (Paasche-type) price index and by similarly deflating the current value of intermediate consumption.

18.143 While the double deflation method is theoretically sound, the resulting estimates are subject to the errors of measurement in the volume estimates of both output and intermediate consumption. This may be especially true if output PPIs are applied to inputs, many of which are imported. Because value added is the relatively small difference between two much larger figures, it is extremely sensitive to error. It is therefore advisable to compare the growth rates of the price and volume measures of value added over recent years with the corresponding growth rates of output and intermediate inputs and, if possible, with volume estimates of inputs of labour and capital services to check for plausibility.

18.144 Because of the possible problems in trying to estimate value added using the double deflation approach, it is also common to estimate the volume movements of value added directly using only one time series, that is a "single indicator" method instead of double deflation. One such single indicator method is to extrapolate value added in proportion to the volume changes in the corresponding levels of output.

18.145 The choice to be made between the use of a single indicator method (which may yield biased results) or a double deflation method (which may yield volatile results) must be based on judgement. The same choice need not be made for all industry groups. Further, the single indicator method may be used for quarterly figures until the year is complete and better double deflation estimates are available.

18.146 In certain non-market service industries, it may be necessary to estimate movements in the volume of value added on the basis of the estimated volume changes of the inputs into the industries. The inputs may be total inputs, labour inputs on their own or intermediate inputs on their own. For example, it is not uncommon to find the movement of the implicit volume of value added estimated by means of changes in remuneration of employees at constant wage rates, or even simply by changes in numbers employed, in both market and non-market service industries. (There is extensive work being carried out to improve these working

assumptions by trying to measure the outputs of government-provided health and education more objectively; see paragraphs 18.124 to 18.133.)

18.147 Compilers of data may be forced to adopt such expedients, even when there is no good reason to assume that labour productivity remains unchanged in the short- or long-term. Sometimes, volume changes for intermediate inputs may be used, for example, short-term movements in value added in real terms for the construction industry may be estimated from changes in the volume of building materials consumed such as cement, bricks, timber, etc. The use of indicators of this kind may be the only way in which to estimate short-term movements in output or value added, but they are not acceptable over long time periods.

18.148 There is also interest in trying to associate movements in value added, after price effects have been eliminated, with changes in labour and capital inputs. These measures of multifactor productivity are discussed in section F of this chapter.

6. Volume measures of the expenditure estimate of GDP

18.149 The measure of GDP easiest to express in volume terms is that of expenditure. As long as appropriate price indices exist, the estimates of final consumption expenditure of households, general government, the central bank and NPISHs, capital formation, exports and imports can be deflated without much conceptual difficulty. It is desirable to work at as great a degree of detail as possible using the product detail available for each aggregate. Care must be taken, as explained in section B of this chapter, to ensure that differences in quality are properly accounted for in the price deflators. This is especially important in the case of capital formation where many items such as computers are subject to rapid technological change and many items are customized, for example large construction projects or pieces of heavy machinery built to individual specifications.

18.150 Each of the components of the expenditure estimate of GDP should be expressed in volume terms. The main approaches to deriving these estimates are described in turn below.

Household final consumption expenditure

18.151 Household consumption expenditure should be deflated at as detailed a degree as possible. In general this will involve making use of CPIs though care is needed to ensure that the coverage of the CPI being used matches the category of consumption expenditure being deflated. Even where detailed estimates of consumption expenditure are not compiled from household surveys and other primary sources, having an estimate of household consumption expenditure by type of product from a supply and use table for deflation will significantly improve the estimate of consumption expenditure in volume terms as compared with the single deflation of a total figure only.

18.152 A major component where CPIs are unlikely to be available is the measure of the owner-occupied housing services. Three alternative approaches are outlined in chapter 11 of the *CPI Manual*, but only the use-based approach is recommended for measuring the consumption of housing services in the national accounts. This approach can take either a user-cost formulation that attempts to measure the changes in the cost to owner-occupiers of using the dwelling, or a rental-equivalence formulation based on how much owner-occupiers would have to pay to rent their dwellings. The latter method is more generally adopted for CPIs.

Final consumption expenditure by government, the central bank and NPISHs

18.153 The final consumption expenditure of general government, the central bank and NPISHs consists of their non-market output less any revenue from incidental sales plus the value of goods and services purchased from market producers for onwards transmission to individual households at prices that are not economically significant less any partial payments. (The derivation of this identity is discussed in chapter 10 on Use of income accounts.)

18.154 Each of these items should be expressed in volume terms separately. The problem of measuring non-market output in volume terms is discussed above. For goods and services transferred to households, the price

indices used should be those paid for the goods less the proportion that households pay. If the proportion of the price paid by government (or NPISHs) alters from one year to another, this is seen as a volume change in expenditure on the part of both general government (or NPISHs) and households.

18.155 Price indices for services are more difficult to compile than for goods and this is especially so for non-market services. Because the current values of non-market services are usually determined as the sum of costs, the obvious approach is to deflate each of these (including calculating remuneration of employees at constant remuneration rates). However, this does not allow for any change in the quality of services provided and in particular for the impact of any productivity changes that may have been achieved. When feasible, direct volume measures should be preferred for individual non-market services as described in *Handbook on prices and volume measures in national accounts* and *Towards measuring the volume of health and education and services*.

Gross fixed capital formation

18.156 The availability of appropriate price indices for gross fixed capital formation varies considerably between different types of asset.

18.157 There are often house price indices for new dwellings and PPIs for new buildings and structures. The costs of ownership transfer should be deflated separately. The current value and volume estimates are usually derived from separate estimates of the constituent parts, legal fees, transport and installation costs, etc.

18.158 For standard products used as capital formation, PPIs are likely to be available but much capital formation is specific to the purchaser and appropriate indices may have to be developed using the best information available.

18.159 Price indices for equipment vary considerably in their growth rates. For example, price indices for computer equipment have fallen rapidly year after year while price indices for transport equipment have tended to increase. It is important in such cases that the different types of equipment are deflated separately using the matching price indices (or, equivalently, an appropriately weighted Paasche price index is used to deflate the aggregate).

18.160 Intellectual property products are generally not well covered by available price indices. There are several reasons for this. One is that many intellectual products are produced for own use and there may be no observed market prices. Another is that intellectual property products are very heterogeneous. However, these are not insurmountable difficulties and there are strategies for addressing them. As examples, the two major items in this category, software and databases and research and development, are considered. Techniques for deriving volume measures of software and databases are described in section E of this chapter, with additional guidance on measuring the prices and volumes of software and data provided in section E of chapter 22 on Digitalisation. For research and development (R&D), although it is often undertaken on own account, given its heterogeneous nature the choice for deflation lies between deriving pseudo output price indices and using input price indices.

Changes in inventories

18.161 Although changes in inventories may be small relative to other components of GDP, the fact that their relative size might change quite significantly from one period to the next means that they can make a significant contribution to changes in GDP particularly in the quarterly national accounts. For this reason, the calculation of changes in inventories in volume terms is particularly important. However, it is also a challenging task. As noted in paragraph 18.65, because changes in inventories can take positive, negative or zero values, a chain index should not be derived directly. Chain volume estimates of changes in inventories should be derived by first deriving chain volume estimates of the opening and closing stocks of inventories and then differencing them.

18.162 Volume estimation should be undertaken at a detailed level for different types of inventories (work-in-progress, finished goods, materials and supplies, and goods for resale). Deflation of stocks of inventories must be related to the composition of those inventories in terms of products rather than to the industry

holding those inventories. PPIs, MPIs, CPIs and labour cost indices are all commonly used in deriving deflators, with adjustments to the appropriate valuation basis. It is important to understand how enterprises value their inventories as this can provide information on not only the type of products but also the average length of time over which goods are kept in inventories.

18.163 When goods are sent abroad for processing without a change of ownership, it must be remembered that some inventories may be held outside the national territory but national prices should be applied to them to derive their corresponding volumes.

Acquisition less disposal of valuables

18.164 National statistical offices generally do not compile specific price indices for valuables. The major constituents should be deflated using the most suitable price indices available.

Exports and imports

18.165 Exports and imports consist of both goods and services. For both exports and imports, goods and services are expressed in volume terms using quite different deflators because of the very different sources available for goods and services. Improvements have been made to price indices for external trade in services that have led to improved data in this area.

18.166 The valuation of imports and exports of goods is discussed in chapter 15 on Supply and use tables. In principle, they should be valued when change of ownership between a resident unit and a non-resident owner takes place and include or exclude transportation costs according to whether the supplier does not or does include transportation to the purchaser in the price charged. In practice, however, many countries are dependent for data on imports and exports of goods on customs declarations that value imports on a CIF basis but exports on a FOB basis. This assumes that change of ownership always takes place at the border of the exporting country. For balance of payments purposes, imports of goods should be converted to a FOB basis also but this is usually done at an aggregate level and may only be disaggregated in the supply and use context if at all.

18.167 Given the existence of detailed XPI and MPI for goods, it should be a simple matter to deflate the current value estimates of exports and imports of goods at as detailed a level as practical in order to approximate the use of Laspeyres volume or Paasche price indices. In order to compile detailed volume estimates of imports of goods in the supply and use tables either the CIF estimates should be put onto a FOB basis or the MPIs need to be adjusted to a CIF basis. The usual working assumption is that CIF and FOB approximate purchasers' and basic prices respectively but as explained in chapter 15, the adequacy of the approximation depends on circumstances surrounding transport margins.

18.168 XPIs and MPIs are compiled by three general methods the nature of which is largely dependent on the source data used. The first and predominant method, at least in terms of the number of countries using it, is unit value indices compiled from detailed import and export merchandise trade data derived from administrative customs documents. As pointed out in section B, unit value indices are not price indices since their changes may be due to price and (compositional) quantity changes. However, they are used by many countries as surrogates for price indices. The second method is to compile price indices using data from surveyed establishments on the prices of representative items exported and imported. The surveyed prices will be of items that are defined according to detailed specifications so that the change in price of the same item specification can be measured over time. The third method is a hybrid approach that involves compiling establishment survey-based price indices for some product groups and customs-based unit value indices for others.

18.169 The case for unit value indices derived from merchandise trade figures is based on the relatively low cost of such data. Their use as deflators requires some caution as they have been shown to be subject to bias when compared with price indices. The bias in unit value indices is mainly due to changes in the mix of the heterogeneous items recorded in customs documents, but also to the often poor quality of recorded data on quantities. The former is particularly important in modern product markets given the increasing differentiation of products. Unit value indices may suffer further in recent times due to an increasing lack

of comprehensiveness of the source data with increasing proportions of trade being in services and by e-commerce and hence not covered by merchandise trade data. Further, countries in customs and monetary unions are unlikely to have intra-union trade data as a by-product of customs documentation. Finally, some trade may not be covered by customs controls, such as electricity, gas and water, or be of "unique" goods, such as ships and large machinery, with profound measurement problems for unit values.

18.170 As noted above, current data sources for price indices for international trade in services are less comprehensive than in other areas. If MPIs and XPIs are available for exports and imports of services they can be readily used to derive the required volume estimates. If they are not, volume estimates of exports of services can be mostly derived using an assortment of PPIs and CPIs. For example, volume estimates of freight transport services could be derived using PPIs according to the form of transport, while volume estimates of accommodation services could be derived using the appropriate CPIs. If MPIs are not available for imports of services then price indices of the countries exporting the services, adjusted for changes in the exchange rate, may have to be used.

18.171 It must be remembered that if imports of goods are valued including transport services, then these transport services should be excluded from total imports of services.

7. Volumes and prices for stocks of fixed assets and depreciation

18.172 Deriving volume estimates of depreciation requires estimates of capital stock excluding the effects of price changes. The levels of capital stock are typically derived by cumulating capital formation in successive periods and deducting the amount that has been exhausted. It clearly makes no sense to aggregate estimates of capital formation at the prices actually paid since the effect of rising prices (even prices rising only moderately) will be to overstate the amount of "new" capital relative to "old".

18.173 The preferred technique is to estimate all capital still in stock at the price of a single year and then revalue this to the price prevailing when the balance sheet is to be drawn up, typically the first and last day of the accounting period. This should be done at the most detailed level practicable. More on this can also be found in chapter 17 on Capital services.

18.174 Consider first a single type of fixed asset. The stock of this type of asset consists of a number of items, typically of different vintages, that are valued and aggregated with a consistent set of prices. "Consistent" is to be understood here meaning the prices relate to the same period or point in time and being based on the same price concept, such as purchasers' prices. Measuring stocks at historical prices, that is, by adding up quantities that have been valued with prices of different periods is therefore an inconsistent valuation. It is sometimes found in enterprise accounts but does not constitute an economically meaningful measure in the context of the SNA.

18.175 The price vector used to value the quantities of fixed assets has to refer to a point in time (beginning or end of period) when the values of stocks are compiled for the opening or closing balance sheets. For other purposes, quantities of assets may be valued with a price vector that refers to the average of an accounting period. For example, measures of depreciation may be derived by subtracting the closing stock of assets from the opening stock plus gross capital formation as long as average-period prices are used for each component in order to eliminate holding gains and losses (and assuming no other volume changes in assets).

18.176 The process by which many capital stock measures are constructed is the perpetual inventory method (PIM). For a given type of fixed asset, time series of gross fixed capital formation are deflated by means of the purchasers' price index of the same asset type, so that the quantities of assets are expressed in volume terms of a particular reference period. These time series in volume terms are then aggregated to yield a stock measure, where account is taken of retirement, efficiency losses or depreciation, depending on the nature of the stock measure constructed. The resulting stock measure is thus expressed in volume terms of the reference period chosen. This reference period may be the current period and stock measures valued in this way have often been labelled "current price capital stocks". However, this is not entirely accurate; as the description of the PIM showed, deflation is needed to arrive at these measures. Thus, they constitute a special case of a constant price valuation, namely valuation at the price vector of the current period.

18.177 Even when the PIM is not applied, for example in the case of direct surveys of assets, the valuation of

different vintages of a particular asset should not use book values that reflect historical prices. Consistent valuation requires that older vintages are valued by the prices of assets of specified ages at the point in time to which the survey refers.

18.178 The next step is to aggregate the movements in capital stocks of individual asset types in volume terms. The use of linked or chain indices, as discussed earlier, is appropriate when building up a series that extends to the distant past since the current period price configuration will not remain representative.

18.179 Further details on the PIM, and on the different types of capital stocks and their measurement are provided in chapter 17 on Capital services and in *OECD Manual on measuring capital, 2nd edition*.

8. Volume measures for stocks of non-produced natural resources and depletion

18.180 For non-produced natural resources, estimates of the physical stocks of particular types of assets may be available, whereas observed market prices may not be available. As discussed in chapter 11 on Capital account and chapter 14 on Balance sheet, in this situation the present value of future economic benefits may be used to estimate the values in monetary terms to be recorded in the balance sheets of the integrated framework of the SNA. For a single, homogeneous natural resource, the volume estimates will be proportional to the physical stocks, but for aggregating different types of natural resources, index numbers are used to derive volume estimates.

18.181 Depletion of non-produced natural resources reflects the decline in the quantity of a stock that is not offset by growth of the stock. In physical terms, depletion is the decrease in the quantity or value of the stock of a non-produced natural resource over an accounting period that is due to extraction of the natural resource by economic units occurring at a level greater than that of growth. In monetary terms, it corresponds with the decline in future economic benefits, due to extraction, that can be earned from a resource, the value of which is based on the physical flows of depletion using the price of the natural resource in situ. For measuring depletion in volume terms, the valuation of the physical flows of depletion uses the price of the natural resource in situ in effect in the reference period. If price indices need to be calculated, they can be derived as the ratio of the value expressed in current prices to the volume measure.

18.182 The change in volume of the stock during any period of any individual non-produced natural resource can be decomposed into the change in volume due to depletion, and the change in volume due to other changes in assets (e.g., new additions to the stocks). The change in value of the stock in monetary terms is decomposed into depletion, other changes in the volume of assets, and revaluation. The depletion of non-produced natural resources in monetary terms is the change in physical stocks due to depletion multiplied by an average price in situ (i.e., the discounted unit resource rent) during the accounting period. The other changes in the volume of assets is the change in physical stocks due to other changes in the volume of assets times an average price in situ during the accounting period. The revaluation is the change in the price in situ multiplied by the average stock during the accounting period, though in practice it may be derived as a residual.

18.183 For non-cultivated biological resources yielding once-only products, similar methodologies can be applied, albeit that the resource can also regenerate, thus giving rise to negative depletion. In the case of cultivated biological resources yielding once-only products, the decrease in regenerative potential is recorded as depletion, while an increase is recorded as negative depletion. For cultivated biological resources yielding repeat products, monetary values and volume estimates are typically compiled using the PIM methods as explained in the previous subsection, where the aggregation of volume estimates for individual asset types uses chain indices.

9. Components of value added

18.184 The price and volume measures considered up to this point relate mainly to flows of goods and services produced as outputs from processes of production. However, it is possible to decompose some other flows directly into their own price and volume components.

Remuneration of employees

18.185 The quantity unit for remuneration of employees may be considered to be an hour's work of a given type and level of skill (see paragraphs 16.70 to 16.82 for more details). As with goods and services, different qualities of work must be recognized and quantity relatives calculated for each separate type of work. The price associated with each type of work is the compensation paid per hour which may vary considerably between different types of work. A volume measure of work done may be calculated as an average of the quantity relatives for different kinds of work weighted by the relative values of remuneration of employees in the previous year or a fixed base year. Alternatively, a "price" index may be calculated for work by calculating a weighted average of the proportionate changes in hourly rates of compensation for different types of work, again using relative remuneration of employees as weights. If a Laspeyres-type volume measure is calculated indirectly by deflating the remuneration of employees at current values by an index of hourly rates of compensation, the latter should be a Paasche-type index.

Taxes and subsidies on products

18.186 Taxes on products are of two kinds, specific taxes linked to the volume of the product and ad valorem taxes levied on the value of the product. A measure of the tax volume of the former can be derived by applying the base year rate of the specific taxes to suitably deflated current value figures of the items bearing the specific tax and for the latter by applying the base year ad valorem rates to current values of items subject to ad valorem taxes deflated by appropriate prices. It is possible to derive a ratio of the tax data in current values and in volume terms but it is difficult to interpret this as a price index since it reflects changing tax rates and changing composition of the purchases of items subject to tax. The calculation for subsidies on products is carried out in an analogous manner.

Net operating surplus and net mixed income

18.187 When GDP is determined as the difference between output and intermediate consumption plus taxes less subsidies on products, gross value added is derived as an accounting residual. This is so in both current values and volume terms. In order for there to be an identity between different estimates of GDP in volume terms, it is not possible to give a price and volume dimension to gross value added. Rather the residual item is described as being "in real terms". If volume estimates of depreciation and depletion and remuneration of employees are available, net operating surplus and net mixed income can be derived but only in real terms and without a volume and price dimension. Thus it is not possible to derive an independent measure of GDP from the income approach since one item is always derived residually.

18.188 The limit to a set of integrated price and volume measures within the integrated framework of the SNA is effectively reached with net operating surplus. It is conceptually impossible to factor all the flows in the distribution of income accounts of the SNA sequence of economic accounts, including current transfers, into their own price and volume components. However, any income flow can be deflated by a price index for a numeraire set of goods and services to measure the increase or decrease of the purchasing power of the income over the numeraire but this is quite different from decomposing a flow into its own price and volume components. A particular instance where this is common is in the calculation of the terms of trade effect on real income as described in section D.

10. Quarterly and annual estimates

18.189 In principle, the same methods used to derive annual volume estimates should be used to derive quarterly (and other sub-annual) volume estimates. Guidelines on data sources and methods for compiling price and volume quarterly estimates are given in chapters 3 and 8 of the *Quarterly National Accounts Manual*. The main considerations are those described in paragraphs 18.48 to 18.53. In practice, annual data are generally more comprehensive and accurate than quarterly data. Although there are important exceptions, such as exports and imports of goods, the overall situation is one of a much richer and more accurate, albeit less timely, set of annual data than quarterly data. For this reason, a sound approach is to compile balanced

annual supply and use tables expressed in current values and in the prices of the previous year and to derive quarterly estimates that are consistent with them. This approach lends itself to the compilation of annually chained quarterly Laspeyres volume measures, although it can be adapted to the compilation of annually chained quarterly Fisher measures, too.

11. Supply and use tables in volume terms

18.190 The rows of a use table show the way in which the total supply of a product is used for intermediate consumption, final consumption, capital formation and exports. This identity must hold in value terms. If the product in question is one where there is an unambiguous measure of quantity, the identity must also hold in volume terms. If the volume figures are derived by deflating the current values, the identity will only hold with certainty if each use category is deflated using a price index that is strictly appropriate to it.

18.191 It is a good practice to compile supply and use tables in both current values and in volume terms at the same time so that the consistency of all the input data, including price indices, can be investigated together.

12. Summary recommendations

18.192 The recommendations reached above on expressing national accounts in volume terms may be summarized as follows:

a. Volume estimates of transactions in goods and services are best compiled in a supply and use framework, preferably in conjunction with, and at the same time as, the current value estimates. This implies working at as detailed a level of products as resources permit.

b. In general, but not always, it is best to derive volume estimates by deflating the current value with an appropriate price index, rather than constructing the volume estimates directly. It is therefore very important to have a comprehensive suite of price indices available.

c. The price indices used as deflators should match the values being deflated as closely as possible in terms of scope, valuation and timing.

d. If it is not practical to derive estimates of value added in real terms from a supply and use framework and either the volume estimates of output and intermediate consumption are not robust or the latter are not available then satisfactory estimates can often be obtained using an indicator of output, at least in the short term. For quarterly data this is the preferred approach, albeit with the estimates benchmarked to annual data. An output indicator derived by deflation is generally preferred to one derived by quantity extrapolation.

e. Estimates of output and value added in volume and real terms should only be derived using inputs as a last resort since they do not reflect any productivity change.

f. The preferred measure of year-to-year movements of GDP volume is a Fisher volume index; changes over longer periods being obtained by chaining, that is, by cumulating the year-to-year movements.

g. The preferred measure of year-to-year inflation for GDP and other aggregates is, therefore, a Fisher price index; price changes over long periods being obtained by chaining the year-to-year price movements, or implicitly by dividing the Fisher chain volume index into an index of the current value series.

h. Chain indices that use Laspeyres volume indices to measure year-to-year movements in the volume of GDP and the associated implicit Paasche price indices to measure year-to-year inflation provide acceptable alternatives to Fisher indices.

i. Chain indices for aggregates cannot be additively consistent with their components whichever formula is used, but this need not prevent time series of values being compiled by extrapolating base year values by the appropriate chain indices.

j. A sound approach to deriving quarterly current value and volume estimates is to benchmark them

to annual estimates compiled in a supply and use framework. This approach lends itself to the construction of annually chained quarterly volume measures using either the Fisher or Laspeyres formulae.

D. Measures of real income for the total economy

1. The concept of real income

18.193 Many flows in the integrated framework of the SNA, such as cash transfers, do not have price and quantity dimensions of their own and cannot, therefore, be decomposed in the same way as flows related to goods and services. While such flows cannot be measured in volume terms they can nevertheless be measured "in real terms" by deflating their values with price indices in order to measure their real purchasing power over some selected basket of goods and services that serves as the numeraire.

18.194 It is possible by use of a numeraire to deflate any income flow in the accounts and even a balancing item such as saving may be deflated by a price index in order to measure the purchasing power of the item in question over a designated numeraire set of goods and services. By comparing the deflated value of the income with the actual value of the income in the base year, it is possible to determine by how much the purchasing power of the income has increased or decreased. Income deflated in this way is generally described as "real income".

18.195 Despite the terminology used, "real" incomes are artificial constructs that are dependent on two points of reference:

a. Real incomes are measured with reference to the price level in some selected reference year; they vary depending upon the choice of reference year;

b. Real incomes measure changes in purchasing power over some selected numeraire; they vary according to the choice of numeraire.

18.196 As there may often be no obvious or uncontroversial choice of numeraire there has always been some reluctance to show real incomes in national accounts on the grounds that the choice of numeraire should be left to the user of the statistics and not the compiler. However, when major changes in prices occur, it can be argued that compilers of statistics are under an obligation to present at least some measures of real income. Not all users of the accounts have the opportunity, inclination or expertise to calculate the real incomes which may be most suited to their needs. Moreover, there is a demand from many users for multipurpose measures of real income, at least at the level of the economy as a whole and the purpose of this section is to indicate how such measures may be compiled.

2. Trading gains and losses from changes in the terms of trade

18.197 In a closed economy without exports or imports, GDP is equal to the sum of final consumption plus capital formation. This sum is described as domestic final expenditures. GDP is also a measure of the income generated in the economy by production. Although income cannot be expressed as the product of prices and volumes, if GDP can be deflated, then in effect this must also be a measure of income in real terms. However, with the inclusion of imports and exports, GDP is no longer identical to domestic final expenditure and deflation of GDP must allow for the deflation of imports and exports as well as of domestic final expenditures. Even if imports and exports are equal in current values, they usually have different prices so there is an impact on real income measures of import and export prices. This is generally done by considering the terms of trade and calculating what is known as the trading gains and losses from changes in the terms of trade.

18.198 Further, the total real income that residents derive from domestic production depends also on the rate at which exports may be traded against imports from the rest of the world.

18.199 ***The terms of trade are defined as the ratio of the price of exports to the price of imports***. If the prices of a country's exports rise faster (or fall more slowly) than the prices of its imports (that is, if its terms of trade improve) fewer exports are needed to pay for a given volume of imports so that at a given level of domestic

production goods and services can be reallocated from exports to consumption or capital formation. Thus, an improvement in the terms of trade makes it possible for an increased volume of goods and services to be purchased by residents out of the incomes generated by a given level of domestic production.

18.200 ***Real gross domestic income (real GDI) measures the purchasing power of the income earned by all institutional units in an economic territory from the use of their labour and capital in the production of goods and services during the accounting period.*** It is a concept that exists in real terms only. When the terms of trade change there may be a significant divergence between the movements of GDP in volume terms and real GDI. The difference between the change in GDP in volume terms and real GDI is generally described as the "trading gain" (or loss) or, to turn this round, the trading gain or loss from changes in the terms of trade is the difference between real GDI and GDP in volume terms. The differences between movements in GDP in volume terms and real GDI are not always small. If imports and exports are large relative to GDP and if the commodity composition of the goods and services that make up imports and exports is very different, the scope for potential trading gains and losses may be large. This may happen, for example, when the exports of a country consist mainly of a small number of primary products, such as cocoa, sugar or oil, while its imports consist mainly of manufactured products. Trading gains or losses, *T*, are usually measured by the following expression:

$$T = \frac{X-M}{P} - \left\{\frac{X}{P_x} - \frac{M}{P_m}\right\} \qquad (20)$$

where

X = exports at current values

M = imports at current values

P_x = the price index for exports

P_m = the price index for imports

P = a price index based on some selected numeraire

P_x, P_m and P all equal 1 in the base year. The term in brackets measures the trade balance calculated at the export and import prices of the reference year whereas the first term measures the actual current trade balance deflated by the numeraire price index. It is perfectly possible for one to have a different sign from the other.

18.201 In addition to changes in the terms of trade, another factor that may affect real income measures is changes in the relative price of traded goods and services (measured as the average of import prices and export prices) with respect to the price of non-traded goods and services. This factor is known as the real exchange rate effect. The effects of changes in the real exchange rate depend on the position of the trade account. For given terms of trade, if imports exceed exports, then a depreciation of the domestic currency (that is, an increase in the price of traded goods and services relative to non-traded goods and services) results in a decline in real income. On the other hand, if exports exceed imports, then these effects go in the opposite direction.

18.202 There is one important choice to be made in the measurement of trading gains or losses: the selection of the price index P with which to deflate the current trade balance. There is a large but inconclusive literature on this topic, but one point on which there is general agreement is that the choice of P can sometimes make a substantial difference to the results. Thus, the measurement of real GDI can sometimes be sensitive to the choice of P and this has prevented a consensus being reached on this issue.

18.203 It is not necessary to try to summarize here all the various arguments in favour of one deflator rather than another, but it is useful to indicate the main alternatives that have been advocated for P. They can be grouped into three classes, as follows.

a. One possibility is to deflate the external balance of goods and services, X-M, either by the import price index (which has been strongly advocated) or by the export price index, with some authorities arguing that the choice between P_m and P_x should depend on whether the current trade balance is negative or positive.

b. The second possibility is to deflate the external balance of goods and services by an average of P_m and P_x , and various different kinds of averages have been suggested, ranging from simple arithmetic or harmonic averages to more complex trade weighted averages.

c. The third possibility is to deflate the external balance of goods and services by some general price index not derived from international trade; for example, the price index for gross domestic final expenditure, or the consumer price index. An advantage of a general price index not derived from international trade (such as the price index for gross domestic final expenditure) is that it incorporates real exchange rate gains and losses in addition to terms-of-trade gains and losses.

18.204 The failure to agree on a single deflator reflects the fact that no one deflator is optimal in all circumstances. The choice of deflator may depend on factors such as whether the external balance of trade in goods and services is in surplus or deficit, the size of imports and exports in relation to GDP, etc. On the other hand, there is general agreement that it is highly desirable and, for some countries vitally important, to calculate the trading gains and losses resulting from changes in the terms of trade. In order to resolve this deadlock it is recommended to proceed as follows:

a. Trading gains or losses, as defined above, should be treated as an integral part of the integrated framework of the SNA;

b. The choice of appropriate deflator for the external balances of goods and services should be left to the statistical authorities in a country, taking account of the particular circumstances of that country;

c. If the statistical authorities within a country are uncertain what is the most appropriate general deflator P to be used, some average of the import and export price indices should be used, the simplest and most transparent average being an unweighted arithmetic average of the import and export price indices. (This is referred to in the specialist literature on the subject as the Geary method.)

18.205 These proposals are intended to ensure that the failure to agree on a common deflator does not prevent aggregate real income measures from being calculated. Some measure of the trading gain should always be calculated even if the same type of deflator is not employed by all countries. When there is uncertainty about the choice of deflator, an average of the import and the export price indices is likely to be suitable.

3. The interrelationship between volume measures of GDP and real income aggregates

18.206 The usual way to calculate real income figures is to start from real GDI and then follow the normal sequence of income aggregates, but with every intervening adjustment deflated to real terms. This is illustrated as follows:

a. Gross domestic product in volume terms

plus the trading gain or loss resulting from changes in the terms of trade

b. *equals* real gross domestic income

plus real earned incomes receivable from abroad

minus real earned incomes payable abroad

c. *equals* real gross national income

plus real current transfers receivable from abroad

minus real current transfers payable abroad

d. *equals* real gross national disposable income

minus depreciation and depletion in volume terms

e. *equals* real net national disposable income.

18.207 The transition from (a) to (b) is the trading gain from changes in the terms of trade explained immediately

above. The steps needed in order to move from (b) to (d) above involve the deflation of flows between resident and non-resident institutional units, namely, earned incomes and current transfers receivable from abroad and payable to abroad. There may be no automatic choice of price deflator, but it is recommended that the purchasing power of these flows should be expressed in terms of a broadly based numeraire, specifically the set of goods and services that make up gross domestic final expenditure. This price index should, of course, be defined consistently with the volume and price indices for GDP.

18.208 Each step in the process should first be calculated for adjacent years in additive volume terms and longer series derived as chain indices.

18.209 A possible alternative approach is to move from GDP in volume terms to net domestic final expenditure in volume terms and then make a single adjustment for the impact on purchasing power of the current external balance using the deflator for net final domestic expenditure to reduce the current external balance to real terms. The advantage of this alternative is a single numeraire, the set of goods and services making up net domestic final expenditures being used throughout. It may be easier, therefore, to grasp the significance of real net national disposable income as this deflator is explicit.

18.210 However, the alternative framework measures the trading gain or loss by using the deflator for net domestic final expenditures as the general deflator P for the trading gain or loss from changes in the terms of trade, whereas it can be argued that P ought always to be based on flows which enter into international trade. On balance, therefore, the original framework presented above is to be preferred.

E. Volume and price measures for particular products or industries

18.211 For most products and industries, the methods discussed in section C of this chapter can be used to derive volume and price measures that are appropriate for national accounts. There are, however, several products that have somewhat unusual characteristics for which more specific guidance may be helpful. For a few particular products, this section provides a brief discussion of some of the challenges that arise for these products and explains some methods that some countries use to address these challenges. For further guidance on volume and price measurement for particular products or industries, please refer to handbooks on this topic, such as the *Handbook on prices and volume measures in national accounts* (Eurostat, 2016) and the other references cited in this section.

1. Agricultural output

18.212 As discussed in paragraphs 7.149 to 7.151, the output of agriculture, forestry and fishing is complicated by the fact that the process of production may extend over many months, or even years. For many crops the growing season will span three quarters of the year, with the harvest taking place in the third quarter, and preparation of the fields taking place in the last quarter of the preceding year.

18.213 To derive volume measures of crop output, it is recommended that for each type of crop, the compilers distribute forecasts of the value of harvest output across the quarters in proportion to the input costs in each quarter. An alternative method is to assume that output in those quarters with no production of finished goods is equivalent to input costs. The alternative method avoids the necessity of deriving forecasts of the value of harvest output but could distort the quarterly pattern of output by assuming that the net operating surplus or net mixed income is entirely attributable to the quarter when the crop is harvested.

18.214 When calculating the volume of quarterly agricultural output, the main difficulty is to decide which price index to use. Theoretically, the price to be applied should be the price prevailing during the period of production, but in practice the prices prevailing during quarters out of the harvest season might be rather unsuitable due to the scarcity of the crop outside of the harvest season. In such circumstances, it may be better to substitute prices related to the basic price forecast for final harvest output in place of the price prevailing in other quarters. If the alternative method discussed in the previous paragraph is used, it is important that one should continue to use a forecast of the product price as a deflator, since deflation by a price index for inputs would only generate the volume of inputs.

2. Large construction projects

18.215 For construction, compilers are encouraged to avoid input cost methods and endeavour to develop output price indices that can be used for deflation. Compiling output price indices can be challenging, though, because each construction project tends to be unique in certain respects, so repricing identical models each period is challenging. For smaller projects, such as houses, small apartment buildings and small office buildings, it may be possible to collect information from construction enterprises on prices over time for a standardized "model" product, such as a typical family house with specified characteristics. For larger projects, such as large factories, highways and reservoirs, the model pricing approach is not likely to be feasible and other methods must be considered.

18.216 Specification pricing may be another possibility if it is possible to break down the attributes of the construction project into identifiable elements. This approach requires that the elements should be separately identifiable, their qualities and impact on the performance of the structure should be quantifiable, and prices for each element should be available in different periods. This approach has the advantage that it allows more flexibility than a standardized model, but in practice it may be difficult to identify the key elements of a project and to collect prices for each of those elements. A related method is the hedonic method, which also requires identifying characteristics that are thought to determine the price of the project, but uses regression methods rather than direct data collection to determine the price for each element.

18.217 Although generally not the preferred method, the use of input prices may be acceptable when projects are so unique that it is not possible to use either specification pricing or the hedonic method to derive a price index.

3. Digital goods and services

18.218 As discussed in chapter 22 on Digitalisation, digital products include assets that exist only in digital form and services that are supplied over a computer network. Examples of digital assets include crypto assets, data and software. Examples of digital services include wholesale and retail e-commerce distribution services, priced and free services of online platforms, audio and video streaming, and digital financial and payment services such as mobile money services. Their production and consumption are enabled by ICT equipment, software, and data and databases along with ICT durable consumer goods, and mobile and fixed line digital communication services. As an example, this section considers the volume and price measurement of software and databases.

18.219 Volume and price measurement challenges are common for products affected by digitalization because innovation leads to rapid changes in the characteristics and sources of supply of digital products. New digital products regularly disrupt existing ones, new models or service contracts frequently embody quality improvements, digital intellectual property products and services with no physical units of measurement are growing in importance, and free products often appear or cease to be free.

18.220 To deal with these rapid changes, the samples used to calculate the price indexes for digital products subject to frequent quality improvements need to be regularly refreshed to keep them representative of current use patterns. In addition, the appearance of new models and the exit of obsolete models must be handled in a way that reflects the value of the quality changes. In some cases, the prices of new characteristics may be observable from the price differences associated with various options that the seller offers to consumers. Another way of handling these quality changes is through explicit estimation of quality changes through hedonic methods.

18.221 These general issues and specific examples of volume and price measurement of digital products, including cloud computing and free products, are discussed in detail in section E of chapter 22 on Digitalisation. The example of software and databases is considered here.

18.222 When deriving volume estimates of the capital formation of software and databases it is advisable to decompose software into three components, packaged (or off-the-shelf), custom-made and own account, and to deflate them and databases separately. There are several reasons for doing this.

a. The three components of software and databases vary in the extent to which price data are available to compile price indices.

b. It is likely that their prices and volumes grow at different rates, particularly between packaged software, the other two software components and databases.

c. Despite the previous point, price indices for packaged software may be used to construct price indices for the other two software components if more appropriate price indices are unavailable.

d. Volume estimates of the items are useful indicators in their own right.

18.223 Packaged software is purchased on a very large scale, generally via licences-to-use and there is an abundance of price data available. The challenge is to construct price indices free of the effects of changing specifications and any other aspects of quality change.

18.224 Custom-made software is also sold on the market, but each custom-made software product is a one-off, which presents an obvious problem for compiling price indices. Although each custom-made product is different, different products may share common components, or a strategy used to develop one product may be used for another. This not only suggests a possible way of compiling a price index, but also suggests means by which productivity gains could be made that would put downward pressure on prices. In sections B and E, the use of model pricing is outlined for measuring price changes of custom-made buildings. A similar approach may be applied to custom-made software, or hedonic methods might be applied.

18.225 Methods for compiling price indices for heterogeneous groups of products and products whose specifications are changing rapidly are described in the *Handbook on hedonic indices and quality adjustments* and in the *PPI Manual.*

18.226 A substantial proportion of software in gross fixed capital formation is undertaken on own account. Hence, it is not possible to derive a true output price index for such software. It is then a matter of choosing between a pseudo output price index and an input price index, obtained by weighting together price indices of the inputs. As already noted, input volume estimates used as a proxy for output do not reflect any productivity growth and so this is not recommended. In the absence of a better alternative, the most obvious option is to use the price index for custom-made software.

18.227 Databases are generally heterogeneous products with a small market since most databases are made for in-house purposes. Volume and price measures for data are discussed in section E of chapter 22 on Digitalisation. For own-account produced databases, it is difficult, if not impossible, to develop a true output price index and once again the choice is between a pseudo output price index and an input price index, although the compilation of a pseudo output index may be difficult to apply in practice.

4. Passenger transport services and price discrimination

18.228 It is not unusual for two airline passengers sitting in adjacent seats to pay very different prices for the same transport services. In some cases, there may be differences in the bundle of services provided with the ticket (for example, one ticket may provide for a refund if the ticket needs to be cancelled), but in other cases there are no meaningful differences in products characteristics. Rather, the difference in price may be explained by price discrimination.

18.229 As explained in paragraph 18.74, price discrimination occurs when groups of purchasers who differ in their willingness to pay for a product are charged different prices by a seller who is able to segment the market and charge different prices based on those differences in willingness to pay. Price discrimination occurs more often in the provision of services than goods because goods can be re-traded (and are thus subject to arbitrage), whereas services generally are not re-traded. Other examples of services for which price discrimination may be common include electricity distribution, financial services, education and health.

18.230 With respect to price and volume measurement, there are two key issues. The first is whether the prices truly are homogenous, or whether there are subtle differences in quality between items that appear to be identical (except for a difference in price). For example, an airline can charge more for economy class seats that offer more leg room than other economy class seats, and that difference should be treated as a difference in quality rather than price. It could also charge a different price for a seat purchased immediately before a flight than one purchased several weeks in advance. The compiler of the price index should try to hold such subtle differences in characteristics constant when specifying the description of the ticket that is being priced. But

when price discrimination leads to different prices being charged for two products with no differences in quality, the differences should be attributed to price rather than volume.

18.231 One way to ensure that differences in price due to price discrimination are not mixed in with volume would be to divide the customers into homogeneous groups. For example, in the case of an air flight travelling on a specific route, the passengers may be grouped into first class, premium economy, and economy class. For each group, the volume is measured by the number of passengers taking the trip and the price is the average price paid by passengers within each group. This decomposition could then be applied to a representative sample of flights travelling on various routes to obtain price and volume indices for air transport services.

5. Output of the central bank

18.232 As explained in chapter 7 on Production account, central banks provide a variety of financial services, including monetary policy services, services related to promoting financial stability, services related to managing international reserves and payment systems and services related to acting as banker to government. In general, these services are provided for free, or at prices which are not economically significant, for the benefit of society as a whole. They are thus considered non-market output of collective services, and total output is to be valued at the sum of costs. Unless an indicator of productivity is available (which is unlikely because the services of central banks generally cannot be observed), the most appropriate volume measure is the deflation of the inputs.

6. Implicit financial services on loans and deposits

18.233 As described in paragraphs 7.180 to 7.189, implicit financial services on loans and deposits are implicit charges paid by depositors or borrowers to a deposit-taking corporation for the services associated with intermediation. These charges are indirect because they are derived from the interest rates associated with the loans and deposits in relation to a reference rate of interest and are not explicit fees charged for services. Thus, traditional methods of deflation are not available for these services and alternative methods must be used.

18.234 Two main approaches have been used for volume and price measures of implicit financial services on loans and deposits: the deflated stocks approach and the output indicators approach. The deflated stocks approach involves deflating the stocks of loans and deposits using a general price index and applying the previous year's (or base year) reference rates to arrive at borrower implicit financial services and depositor implicit financial services in volume terms. The output indicators approach focuses on indicators of specific services that the deposit-taking corporation provides to borrowers and depositors, such as debit and credit card transactions, automatic teller machine transactions, and cheque transactions, which serve as proxies for the volume of financial services provided by the financial institution.

18.235 The output indicators approach attempts to decompose the services provided by a financial intermediaries such as a bank into the distinct activities that it undertakes on behalf of its customers. Advantages of this approach are that the indicators may directly reflect the provision of services that customers value and provide insight into the activities undertaken by the bank. In practice, this approach has also encountered several obstacles and disadvantages. Indicators may not be available for all the specific services provided by banks, and the omission of services that are poorly measured could bias the rate of growth of the overall volume measure. The approach requires that the various output indicators should be weighted, and because there is no observable price or revenue for these services, deriving appropriate weights can be a difficult and complex task. The data burden of compiling the output indicators and their associated weights is likely to be high, and the indicators and weights may tend to become outdated in the face of technological changes and increased digitalization of financial services. In general, it may also be difficult to maintain such a measure and keep the weighting and list of indicators current in the face of rapid changes in the ways that financial services are provided and paid for.

18.236 The more commonly used method is the deflated stocks approach, in which the stocks of deposits and loans are deflated using a general price index. Rather than decomposing the specific activities undertaken by banks, the deflated stocks approach takes the broader view that intermediation services are ultimately related

to allowing the borrower or depositor to engage in deposit and loan transactions, either in the current period or in a future period. The stock of loans or deposits is related to the capacity to engage in transactions, and those transactions are best measured in volume terms using a general price index. In applying the deflated stocks approach, compilers should apply a general price index appropriate for the country and apply the previous year's reference rates to arrive at borrower implicit financial services and depositor implicit financial services in volume terms. Furthermore, because different kinds of loans or deposits have different margins between their interest rate and the reference rate, each type of loan or deposit should be deflated separately, and then the various types of loans and deposits should be aggregated using a price index formula (such as the Paasche price index or Fisher price index that have been discussed in this chapter). The general price index used for deflation should, if possible, exclude implicit financial services on both conceptual grounds (the transactions supported by loans and deposits do not include implicit financial services) and practical grounds (the inclusion of these services would create a circularity in the calculation of the overall index, which could be problematic). Stocks associated with exports of implicit financial services should be deflated using a general domestic price index, while for imports the appropriate country price indices should be used (along with exchange rate adjustments if the stocks are held in a different currency of that of the domestic economy).

18.237 In view of its relative simplicity, the deflated stocks approach is generally preferred for calculating volume measures of implicit financial services on loans and deposits. Countries should select a general price index for deflation that is accurate and appropriate for the types of transactions that are most often supported by loans and deposits in the country.

7. Services of owner-occupied dwellings

18.238 As discussed in paragraphs 7.127 to 7.129, households that own the dwelling they occupy are treated as owners of unincorporated enterprises that produce housing services consumed by those same households. When well-organized markets for rental housing exist, the output of own-account housing services can be valued using the prices of the same kinds of services sold on the market in line with the general valuation rules adopted for goods or services produced on own account. In other words, the output of the housing service produced by owner occupiers is valued at the estimated rental that a tenant would pay for the same accommodation, taking into account factors such as location, neighbourhood amenities, etc., as well as the size and quality of the dwelling itself. Due to the absence of an explicit price for these services, indirect approaches must be used to derive volume and price measures.

18.239 The stratification approach is generally recommended. In a benchmark year (or annually if the necessary data and resources are available), compilers match actual rents paid by those renting in particular strata to similar dwellings used by owner occupants in equivalent strata to derive their rental equivalence value. The benchmark estimate makes use of detailed data on the housing stock broken down between owner-occupied and rented property and by the attributes of these properties that influence the rental, such as floor area, number of rooms, number of bathrooms, etc. This method is known as the "stratification method" because it is based on the stratification of dwelling attributes and rental. The approach can be seen as providing price and quantity data at a detailed level for the estimation of output for a particular year.

18.240 Estimates for years other than the benchmark year are estimated by projecting forward the housing stock and rentals with indicators that reflect the development of these variables over time. The indicators are chosen to reflect adequately the three components of change: the change in price, the change in the quantity of the stock, and the change in the quality of the stock.

18.241 If the stratification method cannot be used, then price indices or volume indicators need to be constructed. The *CPI Manual 2020*, paragraphs 11.87 to 11.102, discusses ways to estimate a price index for the services of owner-occupied dwellings that are broadly consistent with the concepts used in the integrated framework of the SNA. The index can be calculated, for example, from a sample of rented housing units that are weighted to reflect the current composition of owner-occupied units. This approach requires that a country have a transparent rental market and reliable information on rentals by type of accommodation, location and other rental-determining factors. In general, if the volume of the services of owner-occupied dwellings is to be calculated by deflation, care should be taken to ensure that the concepts and coverage in the deflator match the concepts and coverage used to measure the value of those services in the national accounts.

18.242 Whether the stratification method or the price index method is used, subsidized and controlled prices should not be used in calculating the owners' equivalent rental series, though they should be used in calculating the prices of rented units.

18.243 Another consideration in deriving price and volume measures of the services of owner-occupied dwellings is the growing importance of owners subletting part or all of a dwelling to tourists or travellers. In particular, new digital marketplaces for subletting have made it easier to sublet a dwelling and have led to substantial growth in this activity. Traditional housing surveys may have considered this type of subletting to be too unimportant to measure, which may have led to omission or undercounting of these transactions. For the volume measure of the services of owner-occupied dwellings, if the value of the services is based on the rental equivalence of similar rented dwellings that are not sublet, the value of the subletting needs to be deducted from the rental equivalence of the owner-occupant's unit to avoid double counting the services of the unit (as explained in paragraphs 7.128 and 7.129).

8. Education services

18.244 In section C of this chapter, the general principles for measuring volumes and prices of non-market output are explained. Here an example is provided of how the volume of output of non-market education services might be estimated in practice. The *Handbook on prices and volume measures in national accounts* (Eurostat, 2016) and *Towards measuring the volume output of education and health services: A handbook* (OECD, 2009) provide more detailed guidance on the volume and price measurement of these services.

18.245 For primary and secondary education, educational output can be measured based on the amount of teaching received by the students for each type of education. This can be measured as the number of student hours, or if this measure is not available, the simple number of students or pupils can be used provided the hours of instruction remain broadly stable over time. For higher education, and especially for specialized schools, such as medical schools, there may be other aspects of training that are more resource intensive and would not be captured by the hours of instruction. For those types of education, additional stratification and other indicators may need to be added.

9. Health services

18.246 As for education services, reference is made to section C of this chapter for an explanation of the general principles for measuring volumes and prices of non-market output. Here an example is provided of how the volume of output of non-market health services might be estimated in practice. For more detailed guidance, reference is made to the handbooks mentioned in paragraph 18.244.

18.247 Health services are characterized by substantial heterogeneity in the conditions that are being treated and in the types of treatment that are appropriate for each condition. Because the treatment of a condition may involve a bundle of services provided over a period of time, including medical services, laboratory services, and in some cases hospital services, it may not be possible in practice to capture the full treatment of the condition. For hospital services, data may be classified based on the international classification of diseases (ICD) or on diagnosis related groups (DRG), which are systems used to classify medical conditions into relatively homogeneous categories.

18.248 For market output of hospital services, a PPI or CPI that is representative and controls for quality may provide a good deflator. For non-market output of hospital services, volume estimates may be calculated on the basis of direct output measures such as number of discharges by ICD or DRG category weighted by appropriate cost or revenue weights. These methods should be applied at a detailed level to avoid mixing different types of treatments. The most used alternatives are either a unit cost index or a direct volume index, depending on data availability.

F. Estimating labour and multifactor productivity

1. Labour productivity

18.249 Volumes of output, or value added, per hour worked (or per person employed) are described as measures of labour productivity. However, this is a somewhat unsophisticated measure because changes in this measure can reflect a number of factors other than just the number of hours of labour employed. In particular, increases in the amount of capital used can affect this ratio as can changes in the composition of the labour input over time. Volume measures of labour input are discussed in detail in section D of chapter 16 on Labour, and the topics of labour, capital and multifactor productivity are discussed in detail in the *OECD Manual on measuring productivity*.

18.250 Labour productivity shows the time profile of how productively labour is used to generate output in volume terms. Changes in labour productivity reflect the joint influence of changes in capital, intermediate inputs, as well as technical, organizational and efficiency change within and between enterprises, the influence of economies of scale, varying degrees of capacity utilization and measurement errors.

18.251 Neither the number of employed persons nor full-time equivalent numbers on labour input are ideal measures for use in productivity studies. The series for total hours actually worked is preferred by many because it is a reasonable compromise between these cruder measures and more data-intensive measures that adjust for differences in the qualifications, skill levels and composition of labour.

18.252 Using total hours actually worked as the input measure for calculating labour productivity changes over time implicitly assumes that each hour worked is of the same quality. As discussed in paragraphs 16.95 to 16.97, it is possible to produce a quality-adjusted measure of the labour inputs that takes account of changes in the mix of workers over time by weighting together indicators of quality for workers with different levels of skill or education.

18.253 Whichever labour input measure is used in calculating productivity, it is very important to ensure that the coverage of the labour data is consistent with that of the integrated framework of national accounts. In other words, the labour inputs must be estimated within the same production boundary and using the same criteria for residence that are used in the integrated framework of national accounts. Typically, the topics that cause most difficulty are residence (particularly with border workers), defence force and diplomatic personnel (who are commonly not covered by the labour force surveys used to provide the basic data) and obtaining details of unpaid hours (for example, unpaid overtime) or labour input provided by some categories of self-employed persons (for example, contributing family workers).

18.254 Analysts are often interested in measuring productivity on an industry basis as well as for the economy as a whole. Calculating labour input by industry adds an additional degree of difficulty to the estimation process. Among other advantages, using hours worked overcomes the problems involved in measuring labour input by industry when a worker has two or more jobs, not in the same industry.

18.255 Labour productivity, including industry productivity, and multifactor productivity (see below) are all valid measures of an economy's performance. From a practical viewpoint, it is important to ensure that the labour input underlying these sets of estimates are consistent with each other as well as with output measures when calculating the productivity estimates.

Data consistency

18.256 Examining the relative productivity performance of different industries is of interest to many analysts. In practice, the labour input estimates for the whole economy can be estimated either "bottom up" or "top down". In the former case, the totals for the economy as a whole will be completely consistent with the industry estimates because they are summed to derive the total labour estimates. However, in the case of a top-down approach, a range of different data sources may be used to obtain the disaggregation by industry. In such cases, it is important to ensure that the sum of the industry estimates is consistent with the national totals.

18.257 Classifying labour input by industry is not always straightforward. The main issue is to ensure that the labour input estimates for each industry are as consistent as possible with the other national accounts values and

volumes so that the productivity estimates are reliable. One particular problem that arises is where staff are recruited via an external recruitment agency. Maintaining consistency with the industry output means that labour input should be classified to the industry of the establishment that legally employs the workers. In practice, this will be the establishment that pays the employee's wages and salaries and any associated social contributions, which will usually be the employment agency and so the employees should be classified to industry class *7491 Labour recruitment and provision of personnel.* The output of this industry includes the revenue derived from the activity of hiring out staff to those establishments that need the staff; generally, those establishments will be in other industries. The establishments using these staff pay the employment agency and then the employment agency pays the staff so the payments by the "using" establishments will be recorded as part of intermediate input for the using industry.

18.258 Ideally, for productivity purposes both the output attributable to these staff and the hours they work would be recorded in the industry in which they are actually working rather than in the industry *Labour recruitment and provision of personnel*. However, in practice, it is unlikely that the data can be collected to enable the output and hours worked to be classified this way. Notwithstanding these practicalities, for some purposes it may be useful to allocate the staff hired out by employment agencies to the industries that actually use the staff. If such an allocation of labour input is performed, similar adjustments to intermediate consumption and value added of the relevant industries would also be required. Any such allocation should be presented in a supplementary table and not in the integrated framework of national accounts.

2. Capital productivity

18.259 Measures of capital productivity, calculated by dividing the volume of output (or volume of value added) by a volume index of capital services provided, suffer from similar drawbacks to labour productivity, as in the case of capital productivity the changes in the amount of labour can affect this ratio.

18.260 The capital productivity index shows the time profile of how productively capital is used to generate value added or output. Capital productivity reflects the joint influence of labour, intermediate inputs, technical change, efficiency change, economies of scale, capacity utilization and measurement errors. Like labour productivity, capital productivity measures can be based on the volume measures of output or the volume measures of value added.

18.261 The index of capital services is related to the capital services for the total economy, as shown in chapter 17, table 17.11. Volumes of capital services for the individual asset types and industries need to be aggregated using a Laspeyres, Fisher or Törnqvist index to form an index of capital services for the total economy.

3. Multifactor productivity

18.262 A measure that takes account of the contributions of both labour and capital to growth in output, or value added, is multifactor productivity (MFP), which is sometimes referred to as total factor productivity (TFP). The advantage of using MFP as the measure of productivity is that it includes the combined effect of using capital and labour inputs. This topic is discussed further in the *OECD Manual on measuring capital, 2nd edition.*

18.263 Capital-labour MFP is calculated as a volume index of value added divided by a volume index of combined labour and capital input. Capital-labour MFP indices show the time profile of how productively combined labour and capital inputs are used to generate value added. Conceptually, capital-labour productivity is not, in general, an accurate measure of technical change. In practice, the measure reflects the combined effects of disembodied technical change, economies of scale, efficiency change, variations in capacity utilization and measurement errors.

18.264 The productivity model can be extended to include other factors such as the energy and materials used in production. The abbreviation "KLEMS", standing for capital (K), labour (L), energy (E), materials (M) and purchased services (S), is often used for this extended model of compiling productivity estimates at the most detailed level of the supply and use tables. KLEMS MFP is calculated as a volume index of output divided by a volume index of combined inputs, including different types of labour, capital, energy, materials and services, each weighted with its share in total output. KLEMS MFP shows the time profile of how

productively combined inputs are used to generate output. Conceptually, the KLEMS productivity measure captures disembodied technical change. In practice, it also reflects efficiency change, economies of scale, variations in capacity utilization and measurement errors.

18.265 An example of such work can be found in the EU-KLEMS project, which can be found on the project site https://www.rug.nl/ggdc/productivity/eu-klems/.

G. International price and volume comparisons

1. Introduction

18.266 In addition to analyses of changes to GDP and its expenditure components over time (temporal comparisons) for a given country or group of countries to measure economic growth, users also wish to make spatial comparisons of economic size between countries for a given point in time. A commonly used method of making such comparisons is to adjust national accounts aggregates to a common currency using market exchange rates, which are readily available and up-to-date. This method is adequate if users need a ranking of a country's relative spending power on the world market. However, it is not appropriate for comparisons of productivity and standards of living because it does not adjust for the differences in price levels between countries and thus does not give an accurate measure of countries' relative sizes in the volume of goods and services they produce.

18.267 Purchasing power parities (PPPs) are used in producing a reliable set of estimates of the levels of activity between countries, expressed in a common currency. ***A purchasing power parity (PPP) is defined as the number of units of country B's currency that are needed in country B to purchase the same quantity of an individual good or service as one unit of country A's currency will purchase in country A***. Typically, a PPP for a country is expressed in terms of the currency of a base country, with the US dollar commonly being used. PPPs are thus weighted averages of the relative prices, quoted in national currency, of comparable items between countries. Used as deflators, they enable cross-country comparisons of GDP and its expenditure components.

18.268 The International Comparison Programme (ICP) produces internationally comparable economic aggregates in volume terms and publishes PPPs and price level indices (PLIs) for each economy participating in the Programme. Established in 1968 as a small research project, the ICP has grown to now cover all regions of the world, and in coordination with the Eurostat-OECD PPP Programme. The UNSC instituted the ICP as a permanent element of the global statistical programme, conducted at frequent intervals, at its forty-seventh session, in March 2016. It is managed by the World Bank under the auspices of the United Nations Statistical Commission (UNSC), and relies on a partnership of international, regional, sub-regional, and national agencies working under a robust governance framework and following an established statistical methodology. This worldwide coordination is required to collect the data and compile the PPP-based estimates

18.269 This section first examines the index number issues in aggregate comparisons of prices and volumes across countries. National accountants in participating countries will also want to understand the basic principles of the comparison and the practical demands that are made on them for data to compile PPP indices and thus GDP volume comparisons. This material is the subject of the last part of this section.

2. Index number issues

18.270 The theory of index numbers developed in a time series context cannot be applied mechanically to international comparisons simply by replacing the term "period" by the term "country". International comparisons differ in many respects.

a. Time series are ordered by the date of the observation, but countries have no such a priori ordering, that is, there is no predetermined way to order countries when compiling chain indices.

b. In international spatial price comparison exercises, different price collectors will be reporting on the prices of the items in different countries. Thus, to ensure that the items being priced are the

same in each country, all price collectors need to refer to a flexible but detailed structured product description (SPD) for each item.

c. International spatial comparisons are conducted on a less frequent basis than temporal comparisons, in part because they present a large scale coordination challenge, involving the statistical offices of all participating countries as well as international organizations involved in managing the exercise.

18.271 As noted above, the estimation of PPPs is reliant on price comparisons of identical or closely similar items defined by product specifications. The ICP uses SPDs to ensure the quality of the detailed price comparisons. For each item, the SPD describes its technical characteristics in detail so a price collector can precisely identify it in their local market. The specification also includes other variables that need to be considered when pricing the item, such as the terms of sales, accessories, and transportation and installation costs. The list of items to be priced formed from these structured descriptions and the prices collected for them give rise to more precise matching of items between countries. The ICP methodology differentiates the items priced in each country into two lists: the first is "regional items", that are specific to a certain region, and the second is a global core list (GCL) of items, that are common to all the regions. The two lists combined provide the foundation for the estimation of regional PPPs within each regional block. The GCL, on the contrary, is used to estimate the interregional linking factors for linking the regional PPPs and to arrive at a global set of PPPs, as described later in this document.

Representativity versus comparability

18.272 Two critical criteria in selecting the items or products to be priced for calculating PPPs are "representativity" and "comparability". Representative products are those products that are frequently purchased by resident households and are likely to be widely available throughout a country. Representativity is an important criterion in the ICP because the price levels of non-representative products are generally different from those of representative products. Therefore, if one country prices representative products while another prices non-representative products in the same expenditure category, then the price comparisons between the countries will be distorted. Comparability relates to the physical characteristics of a product. Products are considered to be comparable if their physical characteristics, such as size and quality, and economic characteristics, such as whether candles are used as a primary source of light or are primarily decorative, are identical.

18.273 In practice, difficult trade-offs are involved in selecting products that are both representative and comparable. The product lists for calculating PPPs are developed in a way that balances the competing aims of within-country representativity and cross-country comparability. In this respect, they are generally quite different from the products that would be priced by any individual country to compile its price indices (such as the domestic consumer price index or any of a range of producer price indices) and which are used in producing the deflators used to calculate volume estimates in time series national accounts. In the case of time series within a country, representativity is the key criterion in selecting the products to be priced while comparability with other countries is not important. Once a representative product is selected for pricing, the important issue is to price the same product in subsequent periods so that price changes in the product can be measured over time. For the ICP, representativity is required only at a point in time and not over time.

3. PPP estimation

Elementary PPPs

18.274 The lowest level for which PPPs can be estimated across all countries involved in a comparison is referred to as the "basic heading" and it is also the lowest level for which national accounts values are required as weights. In effect, the national accounts values provide the weights to aggregate elementary PPPs at the basic heading level to broader national accounting aggregates, including GDP itself. The basic heading is also the level below which product specifications are determined, with a number of products that are representative of the expenditure within each basic heading being specified for pricing.

18.275 PPPs are calculated and aggregated in two stages: first, estimation of PPPs at the level of basic headings, or elementary PPP calculation, and second, aggregation across basic heading PPPs to form higher-level aggregates. The estimation of basic-heading level PPPs is based on price ratios of individual products in different countries. Typically, no information about quantities or expenditures is available within a basic heading and, thus, the individual price ratios cannot be explicitly weighted using quantities or expenditures when deriving PPPs for the whole basic heading.

18.276 In the current ICP methodology, basic-heading PPPs are first estimated at the regional level and subsequently linked at the global level through the global linking procedure outlined in the following sub-section. Two basic methods are used in the ICP to calculate basic heading PPPs. The first approach is based on the Jevons index made transitive by the Gini-Éltető-Köves-Szulc (GEKS) method, described below, which transforms bilateral PPPs into multilateral PPPs. The other method uses a regression model which directly estimates PPPs that are transitive and base-country invariant. This approach is called the Country Product Dummy (CPD) method because it can be expressed as a regression equation in which all the explanatory/regressor variables are essentially dummy variables (one for each country and one for each commodity) and can be defined as:

$$y_{iA} = \ln p_{iA} = \alpha_1 D_1 + \alpha_2 D_2 + \cdots + \alpha_C D_C + \eta_1 D^*{}_1 + \eta_2 D^*{}_2 + \cdots + \eta_N D^*{}_N \qquad (21a)$$

where Dj (A = 1, 2, . . . , C) and Di * (i = 1, 2, . . . , N) are, respectively, country and commodity dummy variables. Then, the PPP for country A is given by

$$PPP_{iA} = \exp\,(y_{iA}) \qquad (21b)$$

18.277 Given the absence of expenditure weights for individual products, the ICP methodology addresses the issue of representativity with the notion of importance of priced products. In particular, each item priced is identified as either important or less important and weights are assigned to each price observations accordingly.. The estimation of the parameters of the CPD model is then obtained by means of a weighted least squares.

18.278 The results obtained by both methods are the same if every country prices every item. Both methods can be modified to include weighting at the item level. Expenditure weights are of crucial importance at the second stage when the basic heading PPPs are aggregated up to GDP. The main approaches used in the aggregation are summarized in the paragraphs below.

Binary comparisons

18.279 As outlined in section C, the monetary value of GDP, or one of its components, (I_V) reflects the combined differences of both price and quantities, that is: $L_P \times P_Q = I_V$ or $L_Q \times P_P = I_V$. Price and volume indices may be compiled between pairs of countries using the same kinds of index number formula as those used to measure changes between time periods. A Laspeyres-type price index for country B compared with country A is defined as:

$$L_P = \sum_{i=1}^{n} \left(\frac{p_i^B}{p_i^A}\right) s_i^A \equiv \frac{\sum_{i=1}^{n} p_i^B q_i^A}{\sum_{i=1}^{n} p_i^A q_i^A} \qquad (22a)$$

and a Paasche-type index as:

$$P_P = \left[\sum_{i=1}^{n} \left(\frac{p_i^A}{p_i^B}\right)^{-1} s_i^B\right]^{-1} \equiv \frac{\sum_{i=1}^{n} p_i^B q_i^B}{\sum_{i=1}^{n} p_i^A q_i^B} \qquad (22b)$$

where the weights s_i^A and s_i^B are component shares of GDP at current values of countries A and B.

18.280 Given the complementary relationships between Laspeyres and Paasche price and volume indices noted earlier, it follows that a Laspeyres-type volume index for B compared with A can be derived by deflating the ratio of the values in B to A, each expressed in their own currencies, by the Paasche-type price index (22b). A Paasche-type volume index is similarly derived by deflating the ratio of values of B to A by a Laspeyres-type price index (22a).

18.281 The differences between the patterns of relative prices and quantities for two different countries tend to be

relatively large, compared with those between time periods for the same country. The resulting large spread between the Laspeyres- and Paasche-type intercountry price and volume indices in turn argues for an index number formula, such as Fisher, that makes symmetric use of both country's price and quantity information.

Multilateral comparisons

18.282 The need for multilateral international comparisons may arise, for example, to determine GDP aggregates for blocks of more than two countries or rankings of the volumes of GDP, or per capita GDP, for all the countries in a block. It is desirable that such rankings are transitive and base country invariant.

Transitivity

18.283 The first requirement is transitivity. Consider a group of m countries. As binary comparisons of volumes and prices may be made between any pair of countries, the total number of possible binary comparisons is equal to $m(m-1)/2$. Let the price, or volume, index for country A based on country B be written as ${}_BI_A$. A set of indices is said to be transitive when the following condition holds for every pair of indices in the set:

$$ {}_BI_A \times {}_AI_C = {}_BI_C \qquad (23)$$

This condition implies that the direct (binary) index for country C based on country B is equal to the indirect index obtained by multiplying the direct (binary) index for country A based on country B by the direct (binary) index for country C based on country A. If the entire set of indices is transitive, the indirect indices connecting pairs of countries are always equal to the corresponding direct indices. In practice, none of the standard index formulae in common use, such as Laspeyres, Paasche or Fisher, is transitive.

Base country-invariance

18.284 A second requirement for multilateral comparison of relative volumes is that PPPs are base country–invariant. This means that the PPPs between any two countries should be the same regardless of the choice of base country. In order to achieve this, multiple bilateral comparisons using each and every country as a base are generated. Because all countries should be treated symmetrically, a geometric average of all comparisons can be obtained using a simple geometric mean. The resulting PPPs are base country–invariant.

18.285 The objective is to find a multilateral method that generates a transitive and base country-invariant set of price and volume measures while at the same time assigning equal weight to all countries. A number of approaches have been developed to construct aggregate PPPs and relative country volumes. Two multilateral methods have so far been used in previous ICP comparisons: (1) the Gini-Éltetö-Köves-Szulc (GEKS) method based on Fisher's bilateral indexes and (2) the Geary-Khamis (GK) method, which is an additive method based on average prices within blocks of countries to calculate multilateral volume indices.

The GEKS or binary approach

18.286 The GEKS method obtains multilateral volume measures and PPPs starting from the binary comparisons between all possible $m(m-1)/2$ pairs of countries. If each binary comparison P is considered in isolation, the preferred measure is likely to be a Fisher index defined as:

$$P_F\,(p^B, p^A, q^B, q^A) = \left[\frac{p^A \cdot q^A}{p^B \cdot q^A}\,\frac{p^A \cdot q^B}{p^B \cdot q^B}\right]^{\frac{1}{2}};\ A=1,\ldots,K;\ B=1,\ldots,K. \qquad (24a)$$

18.287 The Fisher ideal price index is the geometric mean of the Laspeyres price index between countries A and B and the Paasche index as defined in equations 21a and 21b respectively, Fisher indices are not transitive but it is possible to derive them from a set of $m-1$ transitive indices that resemble the original Fisher indices as closely as possible, using the least squares criterion. Minimizing the deviations between the original Fisher indices and the desired transitive indices leads to the so-called GEKS formula, proposed independently by

Gini, Éltetö, Koves and Szulc. The aggregate PPP for country j, P_j, is defined as:

$$P_A = \prod_{B=1}^{K}[P_F\ (p^B, p^A, q^B, q^A\ )]^{\frac{1}{k}}; A = 1, \dots, K. \qquad (24b)$$

18.288 The GEKS index between countries A and B is the geometric average of the direct index between A and B and every possible indirect index connecting countries A and B. Transitivity is achieved by involving every other country in the block in the GEKS index for any given pair of countries.

18.289 The GEKS index:

a. provides the best possible transitive measure for a single aggregate between a pair of countries, in much the same way as a chain Fisher index may provide the best possible measure of the movement of a single aggregate over time;

b. gives equal weights to the two countries being compared; and

c. is not affected by the relative sizes of the countries, a desirable attribute.

However, the consequences are similar to those for chain indices in a time series context. It is not possible to convert the GEKS volume indices for an aggregate and its components into a set of additively consistent values. This is in contrast to the GK method.

The GK or block approach

18.290 The most widely used form of the block approach uses the average prices of a block of countries to revalue quantities in all countries in the block. This automatically ensures transitivity. The volume index for country B relative to country A is defined as:

$$GK_Q = \frac{\sum_{i=1}^{n} \bar{p}_i q_i^B}{\sum_{i=1}^{n} \bar{p}_i q_i^A} = \frac{\sum_{i=1}^{n} \bar{p}_i\, q_i^C}{\sum_{i=1}^{n} \bar{p}_i\, q_i^A}\ x\ \frac{\sum_{i=1}^{n} \bar{p}_i\, q_i^B}{\sum_{i=1}^{n} \bar{p}_i\, q_i^C} \qquad (25)$$

and can be seen to be transitive. The average price $\bar{p}_i$ for each individual good or service is defined as its total value in the block, expressed in some common currency, divided by its total quantity:

$$\bar{p}_i = \frac{\sum_{j=1}^{m} c^j p_i^j q_i^j}{\sum_{j=1}^{m} q_i^j} \text{ where } \sum_{j=1}^{m} q^j = \sum_{j=1}^{m} \frac{v_i{}^j}{p_i{}^j} \qquad (26)$$

and the summation is over the m different countries in the block. The term c^j in expression (25) is a currency converter which could be either a market exchange rate or a PPP used to convert each country's expenditure on item i, $v_i = p_i q_i$ into the common currency.

18.291 The most common block method is the Geary Khamis (GK) method in which the currency converters used in (25) are the PPPs implied by the volume indices associated with the price indices shown in equations (22). In this method, the average prices and PPPs are interdependent being defined by an underlying set of simultaneous equations. In practice, they can be derived iteratively, initially using exchange rates as currency converters for average prices, for example. The resulting volume indices are then used to derive the implied set of PPPs, which are themselves used in turn to calculate a second set of average prices, volume indices and PPPs, etc.

18.292 The advantages of a block method such as the GK method include:

a. The block of countries is recognized as an entity in itself;

b. The use of a single vector of prices ensures transitivity and the volume measures are additively consistent and can be presented in value terms using the average prices of the block (it is possible to present the results for a group of countries in the form of a table with countries in the columns and the final expenditure components in the rows, in which the values add up in the columns as well as across the rows); and

c. It is possible to compare ratios, such as the shares of GDP devoted to gross fixed capital formation, because the same vector of prices is used for all countries.

18.293 However, comparisons between any two countries, based on the multilateral block results, may not be optimally defined. It was shown in the description on transitivity that best practice price and volume comparisons between countries A and B should make symmetric use of information on their prices and quantities. If A's relative prices are higher than the international average and B's are lower, the use of average prices decreases A's expenditures expressed in average international prices and increases those of B relative to a country whose prices are lower than the international average. Such a disparity is often noted in the case of services between developed and developing countries. Consequently, when using the GK method, PPP-based expenditures are generally overstated for lower income countries. This is known as the Gerschenkron effect. In addition, additive multilateral aggregation approaches like the GK method are not consistent with economic comparisons of utility across countries if the number of countries in the comparison is greater than two.

Global PPPs

18.294 At the global level, regional basic headings PPPs are linked to form a global set of PPPs and measures of price and volume relatives. In order to link the regional basic-heading level PPPs for each participating economy, interregional linking factors are calculated based on the prices of items in the global core list (GCL) collected in all ICP regions. The estimation approach to derive interregional linking factors uses the same CPD method previously described, replacing country with region dummy variables.

18.295 The GEKS aggregation method, with further redistribution of regional volumes in accordance with an economy's regional volume shares, known as the country aggregation with redistribution (CAR) procedure, is used to obtain real expenditures and aggregated PPPs with regional fixity. The fixity concept means that the relative volume—the ratio of real expenditures—between any pair of countries in a region remains the same after the regional results have been combined into a set of global results including all countries.

4. Practical considerations for national accountants

PPPs and the national accounts

18.296 One of the most important uses of PPPs is to calculate comparable volume estimates of GDP and its major components, expressed in a common currency where the effects of differences in price levels between countries are removed. The conceptual framework for ICP comparisons is determined by the GDP expenditure approach defined by the SNA (see paragraphs 19.47 and 19.48). The integrated framework of national accounts is integral to PPP estimates in two ways. First, the integrated framework of national accounts provides the weights that are used to aggregate elementary PPPs to broader aggregates, up to the level of GDP. Second, the integrated framework provides the values that are "deflated" by the PPPs to provide the volumes expressed in a common currency that enable the volume of GDP and its expenditure components to be compared between countries.

18.297 The PPP exercise also produces comparative price level indices (PLIs). A PLI is the ratio of the PPP for a country relative to its market exchange rate, both measured with respect to the same reference currency. PLIs are generally expressed on a base of 100, with the base being either a single reference country or a group of countries, such as global or regional average.

18.298 If a country has a PLI less than 100, then its price level is lower than the numeraire country (or group of countries). Similarly, any pair of countries can be compared directly. If one has a PLI less than the other, then the country with the lower PLI would be considered "less expensive" by the other country, regardless of whether its PLI is above or below 100.

18.299 In practice, PPPs do not change rapidly over time and so a large change in a country's PLI is usually due to a large change in its market exchange rate.

18.300 PPP-based volumes are often expressed as "time series", which they are not. Each year is a comparison between countries in isolation from other years. It is important that the volumes in the ICP not be confused with the time series volumes described earlier in this chapter because they are different measures, although there are some similarities in that they are both designed to measure values that have had the direct effects

of price differences removed from them. In a time series of volumes, the effects of price changes from one period to another are removed to produce the volume measures from which rates of economic growth are calculated. In the case of an intercountry comparison, which is the basis for PPP-based volume measures, the effects of differences due to market exchange rates and those due to different price levels within each country are removed from the national accounts values to provide a comparison between the volumes in the countries concerned.

18.301 Expenditure-based estimates of GDP have been used in most PPP-based comparisons because the prices for final expenditures are more readily observable than those for outputs and inputs, which would be required for a comparison of the production-based estimates of GDP. Consistency in the national accounts is critical in producing comparable estimates across countries and the integrated framework of the SNA has played an important part in PPP-based comparisons by providing the framework for obtaining consistent estimates of GDP and its major aggregates.

18.302 The ICP is the broadest exercise to produce PPPs; the volume estimates produced from the ICP present a snapshot in time of the relationships between countries from all over the world, expressed in a common currency. The ICP is a very expensive and resource- and time-consuming endeavour, which currently takes around three years after the reference year to complete and release the results. In addition to PPPs for the benchmark years, ICP produces PPPs estimates for interim years starting from 2011. While underlying data are not collected during interim years, the applied approach relies on the most granular available information on national accounts deflators and consumer prices indexes to interpolate basic heading PPPs between the reference years and subsequently aggregate them using the standard ICP method discussed above. The resulting PPPs for the interim years uphold the same properties of base-country invariance and fixity as the PPPs from reference year comparisons. PPPs for years before 2011 and after the most recent ICP benchmark year are extrapolated. It is interesting to compare the outcomes of an extrapolation with the benchmarks from two sets of PPPs compiled several years apart. In practice, the extrapolated series do not tie in exactly with the benchmarks and there are several reasons for the differences that arise. An important one is the issue of the consistency between the prices used in the time series national accounts and those used in calculating PPPs as explained in the section on representativity and comparability earlier. Further, the price and volume structure may change significantly over time in a way not picked up in the extrapolation techniques.

Why ICP growth rates differ from national growth rates

18.303 The method commonly used to extrapolate PPPs from their benchmark year to another year is to use the ratio of the national accounts deflators from each country compared with a numeraire country (generally the United States of America) to move each country's PPPs forward from the benchmark. The PPPs derived are then applied to the relevant national accounts component to obtain volumes expressed in a common currency for the year in question.

18.304 Theoretically, the best means of extrapolating PPPs from a benchmark year would be to use time series of prices at the individual product level from each country in the ICP to extrapolate the prices of the individual products included in the ICP benchmark. In practice, it is not possible to use this type of procedure in extrapolating PPP benchmarks because the detailed price data needed are not available in all the countries. Therefore, an approach based on extrapolating at a macro level (for GDP or for a handful of components of GDP) is generally adopted. Leaving aside the data problems involved in collecting consistent data from all the countries involved, a major conceptual question arises with this process because it can be demonstrated mathematically that it is impossible to maintain consistency across both time and space. In other words, extrapolating PPPs using time series of prices at an aggregate level such as GDP will not result in a match with the benchmark PPP-based estimates even if all the data are perfectly consistent.

18.305 One of the reasons for differences between GDP time series and PPP benchmark comparisons stems from the definition of a product. As explained in paragraphs 18.69 to 18.70, location is an essential product characteristic in the national accounts whereas the PPP comparisons use national average prices of the whole country. Another problem is that the weighting patterns underlying the deflators in the time series national accounts will differ from those in the PPP benchmarks over time. In addition, as noted above, the products priced for the PPPs will differ from those underlying the time series because of the requirements in spatial

price indices for representativity within each country and comparability between countries, while in time series the main requirement is for consistency over time. Generally, many more products will be priced for a country's price indices than it is possible to price for the purposes of calculating PPPs. Finally, and often most critically, the prices underlying the deflators in the national accounts are adjusted to remove changes in quality over time and the methods of making such quality adjustments can differ significantly between countries. In particular, the extent of using hedonic methods for adjusting products whose characteristics change rapidly may vary significantly from country to country. Electronic products (such as mobile phones and computers) feature prominently in hedonic quality adjustment, although some countries also use hedonics to quality adjust products such as clothing and housing. Comparing price changes in a country that uses hedonics in quality adjusting the price indices underlying its national accounts deflators with those in a country that does not do so will lead to potentially large inconsistencies between the benchmarks and the extrapolated series.

18.306 Possibly the single biggest factor that affects the difference between extrapolated GDP series and PPP benchmark results is due to exports and imports. GDP volume measures in the national accounts are unaffected by changes in terms of trade whereas they influence GDP in spatial comparisons directly. For example, an increase in energy prices results in an increase in nominal GDP in an energy exporting country. In a spatial comparison, the outcome will be an increase in GDP volumes for energy exporting countries relative to other countries because the net trade PPPs are based on exchange rates, which do not respond to a change in the terms of trade to a significant extent in the short term. The result is that the increase in the terms of trade is treated as a volume effect in the PPP-based benchmark. On the other hand, in the national accounts of energy exporting countries, GDP volumes remain unchanged if the same amount of energy is exported and so the increase in the terms of trade is treated as a price effect, which is observed in the GDP deflator used as the price extrapolator.

Non-market services

18.307 Non-market services, that is, services that are not directly purchased by final users, are typically difficult to compare across countries because they have no economically significant prices with which to value outputs. In addition, the institutional arrangements for their provision and the conditions of payment differ from country to country, and so does the quality of their outputs. Such differences, however, are typically a challenge to identify and quantify. In the ICP classification, the main share of non-market services refers to the provision of government services. The PPPs of these non-market services are based on input costs as measured by remuneration of employees, intermediate consumption, and other categories. For these prices to be comparable across countries, the assumption is that the total sum of these input costs translates to an equivalent measure of outputs. However, due to differences in human and physical capital, this equivalence does not hold.

18.308 To account for differences in productivity between countries, the current ICP methodology estimates "Productivity Adjustment Factors" (PAFs), and applies this adjustment to the PPPs of non-market services. Without this productivity adjustment, the real consumption of government services would be overestimated in economies with relatively lower input costs and vice-versa. In the estimation of global PPPs, PAFs are applied in two stages: first at the regional level and second at the global level. At the regional level, each ICP region determines whether to apply PAFs or not based on the heterogeneity of the regional economies. In a region where all economies have similar levels of economic development and productivity, it may not be necessary to apply any adjustments. In a region where productivity levels vary significantly, PAFs are estimated based on: (i) capital stock per employee, (ii) share of labour compensation as part of GDP, and (iii) the relative costs of capital measured in PPP terms. These regional PAFs are then applied to the regional PPPs of the relevant non-market services. The second stage involves estimating global PAFs, using the same approach as in the regional level. The global PAFs are applied in the global linking process, maintaining the regional fixity of PPPs. This process ensures that the productivity differences between the regions and countries are accounted for.

Conclusion

18.309 Comparisons of activity levels between countries are a key use of national accounts. Despite conceptual and empirical challenges, PPP-based volumes offer a much more reliable foundation for international comparisons than the commonly used alternative of converting national accounts aggregates into a common currency using market exchange rates. The use of PPPs and related measures has steadily increased, as they are now produced frequently and are based on an established methodology and coordination framework

5. Productivity comparison across countries

18.310 Productivity growth over time is often expressed in percentage terms and comparisons across countries are made in terms of these national growth rates. Assuming similar methods have been used to compile the estimates for the countries being compared, and that they have roughly comparable levels of productivity, this sort of comparison is interesting and much simpler than the alternative of comparing levels. Measuring the relative levels of production (for example, the volume of GDP or of GDP per capita) or productivity between countries is more complicated because it is necessary to convert the national accounts data to a common currency. The best means of doing so is to calculate PPPs, which adjust for differences in price levels between countries as well as differences in exchange rates.

18.311 The international comparisons of productivity below the level of GDP, such as by industry, are problematic. PPPs are calculated using the expenditure-based estimates of GDP so there are no PPPs for the individual industries that contribute to GDP. Therefore, it is necessary to assume that the PPP for a single aggregate such as GDP is applicable to all industries. Examining the differences in the PPPs for the various expenditure components shows they can vary significantly so this is unlikely to be a very good assumption. Making robust international comparisons of productivity at disaggregated levels is thus a very demanding exercise, though considerable progress has been made in recent years.

Chapter 19: Summarizing, integrating and balancing the accounts

A. Introduction

19.1 This chapter provides a synthesis of the sequence of economic accounts presented in chapters 7 to 14 and shows how they relate to the tables in chapter 3 on Overview of the integrated framework. It shows how the most common aggregates in the integrated framework of the SNA, GDP, NDP, GNI and NNI are related to the balancing items in the various accounts. It shows the impact on national aggregates of transactions undertaken between a resident unit and a resident in the rest of the world. It also describes the articulation of the accumulation accounts. The chapter ends with a section on balancing the accounts.

19.2 The chapter lays the groundwork for greater elaboration of the sequence of economic accounts, in both manners of presentation and further analysis that form the subject matter of later chapters.

B. Integrating the accounts

19.3 The tables presented in chapters 7 to 14 on the sequence of economic accounts use a format very common in published tables; the items representing revenues are shown in the right-hand side of the table and the items representing expenditures in the left-hand side of the table. This format is flexible because it allows a multiple number of columns to be shown for both parts of the table and even for the two parts to be shown on different pages if the columns are sufficiently numerous. However, there is another format for the tables that is particularly useful for explanatory purposes, the T account.

19.4 In a T account, only one set of descriptive headings (stubs) is shown in the middle of the table with values representing revenues in columns to the right and values representing expenditures in columns to the left. An example of a T account is given in table 19.1. The rows in the table show the rows from tables 7.1, 8.1, 8.2, 9.1 and 10.1 at a high level of aggregation. Data for the individual sector accounts are not shown but the total for the economy as well as for the rest of the world and the total of both these are shown. In addition, the column for the goods and services account is retained.

1. Summarizing the current accounts

19.5 The current accounts included in table 19.1 consist of the production account and accounts showing the distribution of income, the redistribution of income and the use of income. In addition to these accounts, table 19.1 begins with imports and exports of goods and services, the entries from the rest of the world account that show the value of goods and services that enter the national economy from the rest of the world and those that are produced in the national economy but are provided to the rest of the world.

The production account

19.6 The immediately following rows show the main entries from the production account: output as well as taxes less subsidies on products not already included in the value of output (see paragraphs 7.59 to 7.77) on the revenues side and intermediate consumption on the expenditures side. The balancing item for the production account, value added, appears next, also on the expenditures side as the closing item of the production account. Value added is the basic building block for determining GDP.

Table 19.1: Summary of the current accounts in the sequence of economic accounts

Table 19.1:Summary of the current accounts in the sequence of accounts

Expenditures							Revenues			
Total economy	Rest of the world	Goods and services	Total	Code	Transactions and balancing items		Total economy	Rest of the world	Goods and services	Total
		499	499	P7	Imports of goods and services			499		499
		392	392	P71	Imports of goods			392		392
		107	107	P72	Imports of services			107		107
	540		540	P6	Exports of goods and services				540	540
	462		462	P61	Exports of goods				462	462
	78		78	P62	Exports of services				78	78
					Production account					
		3 617	3 617	P1	Output		3 617			3 617
		3 075	3 075	P11	Market output		3 075			3 075
		147	147	P12	Output for own final use		147			147
		395	395	P13	Non-market output		395			395
1 881			1 881	P2	Intermediate consumption				1 881	1 881
		141	141	D21	Taxes on products		141			141
		- 8	- 8	D31	Subsidies on products (-)		- 8			- 8
1 869			1 869	B1g	Value added, gross / Gross domestic product					
222			222	P51d	Depreciation					
30			30	P8	Depletion					
1 617			1 617	B1n	*Value added, net / Net domestic product*					
	- 41		- 41	B11	*External balance of international trade in goods and services*					
					Generation of earned income account					
				B1g	Value added, gross / Gross domestic product		1 869			1 869
				B1n	*Value added, net / Net domestic product*		1 617			1 617
1 150			1 150	D1	Remuneration of employees					
235			235	D2	Taxes on production and imports					
141			141	D21	Taxes on products					
94			94	D29	Other taxes on production					
- 44			- 44	D3	Subsidies					
- 8			- 8	D31	Subsidies on products					
- 36			- 36	D39	Other subsidies on production					
467			467	B2g	Operating surplus, gross					
61			61	B3g	Mixed income, gross					
214			214	P51d1	Depreciation on gross operating surplus					
8			8	P51d2	Depreciation on gross mixed income					
30			30	P81	Depletion on gross operating surplus					
0			0	P82	Depletion on gross mixed income					
223			223	B2n	*Operating surplus, net*					
53			53	B3n	*Mixed income, net*					
					Allocation of earned income account					
				B2g	Operating surplus, gross		467			467
				B3g	Mixed income, gross		61			61
				B2n	*Operating surplus, net*		223			223
				B3n	*Mixed income, net*		53			53
	6		6	D1	Remuneration of employees		1 154	2		1 156
			0	D2	Taxes on production and imports		235			235
			0	D3	Subsidies		- 44			- 44
391	44		435	D4	Property income		397	38		435
- 18			- 18	D42dep (-)	Depletion borne by the legal owner		- 18			- 18
1 879			1 879	B5g	Balance of earned incomes, gross / National income, gross					
1 627			1 627	B5n	Balance of earned income, net / National income, net					
					Income transfers other than transfers in kind account					
				B5g	Balance of earned incomes, gross / National income, gross		1 879			1 879
				B5n	*Balance of earned income, net / National income, net*		1 627			1 627
1 212	17		1 229		Current transfers		1 174	55		1 229
212	1		213	D5	Current taxes on income, wealth, etc.		213	0		213
333	0		333	D61	Social contributions less service charges		333	0		333
384	0		384	D62	Social benefits other than social transfers in kind		384	0		384
283	16		299	D7	Other current transfers		244	55		299
1 841			1 841		Disposable income, gross					
1 589			1 589		*Disposable income, net*					
					Use of disposable income account					
				B6g	Disposable income, gross		1 841			1 841
				B6n	*Disposable income, net*		1 589			1 589
1 414			1 414	P3	Final consumption expenditure				1 414	1 414
11	0		11	D8	Adjustment for the change in pension and non-pension entitlements		11	0		11
427			427	B8g	Saving, gross					
175			175	B8n	*Saving, net*					
	- 13		- 13	B12	*Current external balance*					

The allocation of earned income account

19.7 In the allocation of earned income account, these contributions to value added appear as revenues of the relevant sectors; remuneration of employees to households, taxes less subsidies to government and operating surplus and mixed income to the sectors containing the relevant production units. In addition, however, the allocation of earned income account shows how much of each of these three items is payable to non-resident units and where comparable items generated in non-resident units are payable to resident sectors.

19.8 In the course of production, producers may have made use of financial and non-produced non-financial assets belonging to other units. The payments for the use of these assets are shown as property income. Property income may be payable by residents or non-residents and may be receivable by residents or non-residents. Once the values for three of them are known, the value of the last is necessarily determined. For example, property income receivable by residents must be equal to property income payable by both residents and non-residents less property income receivable by non-residents. Thus property income receivable by both residents and non-residents (shown under revenues) must be equal to property income payable by both residents and non-residents (shown under expenditures).

19.9 The balancing items from the generation of earned income account, operating surplus and mixed income, are recorded as a revenue on the allocation of earned income account. Together with the revenue entries of remuneration of employees, taxes less subsidies on production and property income, less the entries for these items as expenditures leads to the balance of earned incomes. This is the balancing item for the allocation of earned income account shown as an expenditure, and the first item, a revenue, of the income transfers other than social transfers in kind account.

19.10 From the balance of earned incomes, another key aggregate of the integrated framework of the SNA, national income, is derived. Value added is determined by the criterion of residence; all resident units and only resident units contribute to the total. For the balance of earned income, however, the focus changes not just from production to income but to the residence of the units receiving the income generated by production rather than the residence of the producing units themselves. Further discussion of national income appears below in connection with the discussion of the rest of the world account.

The income transfers other than social transfers in kind account

19.11 The income transfers other than social transfers in kind account shows how earned income is transformed to disposable income by the payment and receipt of current transfers. Various factors stimulate redistribution of income between sectors of the economy. One of these is the role of government in levying current taxes on income, wealth, etc.; one is the role played by social insurance schemes, mainly in redistributing contributions by current workers to retirees; another is the role of insurance in providing a mechanism whereby small regular payments by many units are channelled to a few units suffering predefined sorts of losses. Among other types of current transfers, the role of purely voluntary transfers is of increasing interest. Such transfers may provide the main source of finance for NPISHs, in the form of international cooperation between governments, or may be between resident and non-resident households in the form of workers' remittances.

19.12 Current transfers payable by resident and non-resident units must be equal to current transfers receivable by both resident and non-resident units, and thus total uses and resources are equal as is the case for property income.

19.13 Disposable income is an important balancing item in the accounts since it shows, disregarding the impact of capital transfers, how much can be consumed without the need to run down assets or incur liabilities. It thus corresponds to the economic theoretical concept of income.

The use of income accounts

19.14 The use of disposable income account shows how much disposable income is in fact used for final consumption and how much is saved. When looking at the sector accounts, the adjustment for the change in pension and non-pension entitlements has to be made to ensure that these form part of the saving of

households and not of pension funds. However, in the aggregate only flows relating to pension and non-pension entitlements involving non-resident employees of resident enterprises or resident employees of non-resident enterprises appear.

19.15 Table 19.1 does not include the redistribution of income via the transfers in kind account and the use of disposable income adjusted for social transfers in kind account but these could be inserted either in place of, or as a complement to, the income transfers other than social transfers in kind account and the use of disposable income account.

2. Summarizing the accumulation accounts

19.16 Table 19.2 presents a summary of the accumulation accounts and balance sheets with the same degree of detail as used for the current accounts in table 19.1. In this case, the titles given to the right- and left-hand columns are changed; the columns to the right are described as changes in liabilities and net worth, and those to the left show changes in assets.

The capital account

19.17 The first items appearing on the right-hand side of the capital account are saving and the current external balance. Also appearing as revenues are capital transfers receivable. By convention, capital transfers payable also appear under revenues but with a negative sign. For the economy as a whole, including transactions with the rest of the world, capital transfers receivable and payable exactly offset one another in the same way that property income and current transfers do. However, this equality is not generally true for the total economy excluding the rest of the world nor for individual sectors within it.

19.18 Together, saving plus receivable, minus payable, capital transfers show how much is available within the economy to acquire non-financial capital, primarily capital formation but also non-produced non-financial assets. This total is shown as a special aggregate called changes in net worth due to saving and capital transfers. It is not a balancing item but has the same characteristic of being an analytical construct of particular interest.

19.19 The expenditures shown in the capital account are the acquisition, less disposals, of produced non-financial assets and non-produced non-financial assets, both excluding natural resources, as well as acquisitions, less disposals, of natural resources. The balancing item of the capital account is net borrowing or lending. When there is net lending, it shows the extent to which the sum of saving and capital transfers is actually used to finance the acquisition of non-financial assets and how much is lent to the rest of the world. When there is net borrowing, saving plus capital transfers are insufficient to finance all the acquisition of non-financial assets and borrowing from the rest of the world is necessary.

The financial account

19.20 The financial account shows exactly how net lending or borrowing takes place by showing all the transactions in financial instruments. Transactions in financial assets shown as changes in assets exactly balance the amounts shown as changes in liabilities because when all transactions of resident units with either other resident units or non-resident units are taken into account, there can be no net lending or borrowing left unexplained.

19.21 Because the financial account does not introduce any new balancing items and only explains how net lending or net borrowing is effected, and because it requires quite different data sources and understanding of the data sources, this account may not always be compiled by national accountants. However, without the financial account, the compiler cannot be certain that the estimates for the other accounts are fully consistent and complete. Just as the national accountant must have an understanding of the balance of payments system and ensure that the transactions relating to the rest of the world are fully captured in the accounts, there is a need to have an understanding of monetary and financial statistics. Two later chapters, chapter 29 on The financial corporations' sector and chapter 33 on Transactions and positions between residents and non-residents, discuss the relationships with these other statistical systems in more detail.

Table 19.2: Summary of the accumulation accounts and balance sheet

Change in assets							Changes in liabilities and net worth			
Total economy	Rest of the world	Goods and services	Total	Code	Transactions and balancing items		Total economy	Rest of the world	Goods and services	Total
					Capital account					
				B8n	*Saving, net*		175			175
				B12	*Current external balance*			- 13		- 13
180			180	NF1	Acquisitions less disposals of produced non-financial assets (excluding natural resources)					
349			349	NF11	Gross fixed capital formation				349	349
- 204			- 204	NF12	Depreciation (-)					
25			25	NF13	Changes in inventories				25	25
10			10	NF14	Acquisitions less disposals of valuables				10	10
0	0		0	NF2	Acquisitions less disposals of non-produced non-financial assets (excluding natural resources)					
- 18			- 18	NF3	Acquisitions less disposals of natural resources					
27			27	NF31	Gross fixed capital formation				27	27
- 18			- 18	NF32	Depreciation (-)					
3			3	NF33	Changes in inventories				3	3
0			0	NF34	Acquisitions less disposals of non-produced natural resources					
- 30			- 30	NF35	Depletion (-)					
				D9r	Capital transfers, receivable		62	4		66
				D9p	Capital transfers, payable		- 65	- 1		- 66
				B101	Changes in net worth due to saving and capital transfers		172	- 10		162
10	- 10		0		*Net lending (+) / net borrowing (–)*					
					Financial account					
				B9	*Net lending (+) / net borrowing (–)*		10	- 10		0
437	48		485		Net acquisition of liabilities		427	58		485
- 1	1		0	F1	Monetary gold and SDRs		0	0		0
90	11		101	F2	Currency and deposits		102	- 1		101
86	10		96	F3	Debt securities		75	21		96
78	4		82	F4	Loans		47	35		82
107	12		119	F5	Equity and investment fund shares / units		105	14		119
48	0		48	F6	Insurance, pension and standardized guarantee schemes		48	0		48
14	0		14	F7	Financial derivatives and employee stock options		11	3		14
15	10		25	F8	Other accounts receivable/payable		39	- 14		25
					Other changes in the volume of assets and liabilities account					
18			18		Total other changes in volume		3			3
- 7			- 7	K1-K6 AN1	Produced non-financial assets (excluding natural resources)					0
- 1			- 1	K1-K6 AN2	Non-produced non-financial assets (excluding natural resources)					0
23			23	K1-K6 AN3	Natural resources					0
3			3	K1-K6 AF	Financial assets and liabilities		3			3
				B102	Changes in net worth due to other changes in the volume of assets and liabilities		15			15
					Revaluation account					
					Nominal holding gains and losses					
280			280	K7 AN	Non-financial assets		0			0
84	7		91	K7 AF	Financial assets and liabilities		76	15		91
				B103	*Changes in net worth due to nominal holding gains/losses*		288	- 8		280
					Neutral holding gains and losses					
198			198	K71 AN	Non-financial assets		0			0
136	12		148	K71 AF	Financial assets and liabilities		126	22		148
				B1031	*Changes in net worth due to neutral holding gains/losses*		208	- 10		198
					Real holding gains and losses					
82			82	K72 AN	Non-financial assets		0			0
- 52	- 5		- 57	K72 AF	Financial assets and liabilities		- 50	- 7		- 57
				B1032	*Changes in net worth due to real holding gains/losses*		80	2		82
					Stocks and changes in assets					
					Opening balance sheet					
4 924			4 924	AN	Non-financial assets					
8 231	805		9 036	AF	Financial assets/liabilities		7 762	1 274		9 036
				B90	*Net worth*		5 393	- 469		4 924
					Total changes in assets and liabilities					
457			457	AN	Non-financial assets					
524	55		579	AF	Financial assets/liabilities		506	73		579
				B10	*Changes in net worth, total*		475	- 18		457
				B101	*Saving and capital transfers*		172	- 10		162
				B102	*Other changes in volume of assets*		15	0		15
				B103	*Nominal holding gains/losses*		288	- 8		280
				B1031	Neutral holding gains/losses		208	- 10		198
				B1032	Real holding gains/losses		80	2		82
					Closing balance sheet					
5 381			5 381	AN	Non-financial assets					
8 755	860		9 615	AF	Financial assets/liabilities		8 268	1 347		9 615
				B90	*Net worth*		5 868	- 487		5 381

3. The goods and services account

19.22 Throughout the sequence of accounts, each transaction line is balanced. For the distributive and redistributive transactions, this is automatically the case if the data are fully reconciled since whatever is shown as payable by one unit must be shown as receivable by another. However this is not obviously the case for the transactions relating to goods and services. In order to preserve the balancing nature of the accounts, a column headed "goods and services" is included on each side of the accounts. In every case where there is a transaction relating to goods and services, an entry in the goods and services column on the other side of the account is made.

19.23 Ultimately the entries on the left-hand side of the account show the value of all goods and services supplied to the economy, either as domestic output or imports, plus the taxes on products less subsidies not already included in the value of output. On the right-hand side of the account, the use of the goods and services is shown, as intermediate or final consumption, capital formation or exports.

19.24 Clearly, ex post the total amount of goods and services supplied to the economy must be equal to the total use made of those goods and services. Setting the entries in the left-hand goods and services column equal to those in the right-hand side column gives the familiar goods and services account, described in chapter 15 on Supply and use tables:

Output + imports + taxes less subsidies on products

= intermediate consumption + final consumption + exports + capital formation

19.25 The equation reflects the notion that goods and services produced in the current period are used either to generate more goods and services in the current period (intermediate consumption) or to generate more goods and services in future periods (capital formation) or to satisfy human wants immediately (final consumption). However, because no economy is entirely closed, it is necessary to allow for those goods and services supplied from outside the economy (imports) and those goods and services used by other economies (exports).

19.26 This identity comprises the goods and services account. ***The goods and services account is the account that records the total domestic output and imports of goods and service supplied as resources to the economy (including the value of taxes less subsidies on products not already included in the valuation of output) and the use of the same goods and services as intermediate consumption, final consumption, capital formation and exports.***

4. The accounts for the rest of the world

19.27 The entries in the integrated accounts for the rest of the world correspond to the entries in the balance of payments as laid out in the *BPM*. Table 19.3 shows the entries for the rest of the world in the structure of the balance of payments accounts.

19.28 There are four current accounts; one for goods, one for services, one for earned income and one for transfer income. Each of these has a balancing item but, unlike the accounts in the SNA sequence of economic accounts, the balancing items do not carry down from one account to the next. However, other balancing items that do match those in the SNA are allowed for. Thus the external balance of goods, services and earned income is the sum of the (external) balance of goods, the (external) balance of services and the (external) balance of earned incomes and corresponds to the balance of earned income for the total economy. When this item is added to the external balance of transfer income, the current external balance is derived which corresponds to saving for the total economy. In this respect, it should be noted that all balancing items in the external account have an opposite sign compared to the accounts of the rest of the world in national accounts. While the national accounts record flows and positions between residents and non-residents from the perspective of non-residents, the external accounts record the relevant flows and positions from a domestic point of view.

19.29 In the capital account of the rest of the world, the only entries are for capital transfers receivable from and payable to the rest of the world and acquisitions less disposals of non-produced non-financial assets involving non-resident units. These give the (external) capital account balance. When this is added to the current

external balance, the result is net lending to or borrowing from the rest of the world.

Table 19.3: Entries for the rest of the world using the BPM structure of accounts

Expenditures			Revenues
Rest of the world	Code	Transactions and balancing items	Rest of the world
		Goods and services account	
	P7	Imports of goods and services	499
540	P6	Exports of goods and services	
- 41		*External balance of international trade in goods and services*	
		Allocation of earned income account	
6	D1	Remuneration of employees	2
	D2	Taxes on production and imports	
	D3	Subsidies	
44	D4	Property income	38
- 10		*External balance of earned incomes*	
- 51		*External balance of goods, services and earned incomes*	
		Income transfers other than transfers in kind account	
17		Current transfers	55
38		*External balance of transfer income*	
- 13	B12	*Current external balance*	
		Capital account	
0	NF1	Acquisitions less disposals of non-produced non-financial assets	
	D9r	Capital transfers, receivable	4
	D9p	Capital transfers, payable	- 1
3		*External capital account balance*	
- 10		*Net lending (+) / net borrowing (–)*	

5. Integration of stock and flow data

Linking the opening and closing balance sheets

19.30 The balance sheets are an integral part of the SNA sequence of economic accounts. An understanding of the articulation of the balance sheets with the flows relating to assets in the capital, financial and other changes in assets and liabilities accounts is fundamental to understanding the role capital accumulation plays in the integrated framework of the SNA.

19.31 The basic accounting identity linking the opening and the closing balance sheet values for a single type of asset can be summarized as follows:

The value of the stock of a specific type of asset in the opening balance sheet valued at the prices prevailing at the date the balance sheet refers to

plus the total value of the assets acquired, less the total value of those disposed of (including depreciation and depletion, where appropriate), in transactions that take place within the accounting period

plus the value of other positive or negative changes in the volume of the assets held (for example, as a result of the discovery of a mineral or energy resource or the destruction of assets as a result of war or a natural disaster)

plus the value of the positive or negative nominal holding gains accruing during the period resulting from a change in the price of the asset

equals the value of the stock of the asset in the closing balance sheet valued at the prices prevailing at the date the balance sheet refers to.

19.32 The value of the non-financial assets acquired, less the total value of those disposed of, in transactions that take place within the accounting period is recorded in the capital account and the value of transactions in financial assets (and liabilities) in the financial account. The value of other positive or negative changes in the volume of the assets (and liabilities) held is recorded in the other changes in the volume of assets and liabilities account. The value of the positive or negative nominal holding gains accruing during the period resulting from a change in the price of the asset (or liability) is recorded in the revaluation account. This means that the value of each entry in the closing balance sheet can, in principle, be constructed by taking the value in the opening balance sheet and adding to it the entries relating to the same asset (or liability) in each of the four accumulation accounts.

19.33 A nominal holding gain may be decomposed into a neutral holding gain and a real holding gain. The nominal holding gain indicates by how much the value of an asset has increased over the period. The neutral holding gain indicates the increase that would have been necessary for the asset to exactly maintain its purchasing power over the period. If the nominal holding gain is larger than the neutral holding gain, the owner of the asset has a real holding gain (equal to the difference between the nominal and neutral holding gains). If the nominal holding gain is less than the neutral holding gain, then the owner suffers a real holding loss.

19.34 The identity linking the opening and closing balance sheets and the accumulation account is valid even in the case of assets that are held only temporarily within the accounting period and that do not appear in either the opening or the closing balance sheets. For example, an asset may be acquired in a period, increase in price due to a holding gain and then suffer some destruction before being sold again before the end of the period.

19.35 The nominal holding gains and losses shown in the revaluation account include both realized and unrealized holding gains and losses but the realized holding gains and losses are incorporated in the value of transactions of the assets, leaving only the unrealized holding gains and losses in the closing balance sheet.

19.36 The link between the balance sheet and flow accounts in respect of financial assets and liabilities is often recognized and presented. Less attention has been focused on the links for non-financial assets though. As chapter 17 on Capital services makes clear, it is no less important, especially as regards an understanding of productivity growth in the economy.

Net worth

19.37 The balancing item on a balance sheet is equal to the sum of all the assets less all the liabilities and is called net worth. The change in net worth between the opening and closing balance sheet can be shown to be composed of three items.

a. The first of these is the change in net worth due to saving and capital transfers. This comes from the capital account and is the item shown as the total of revenues on that account.

b. The second item is the change in net worth due to other changes in the volume of assets and liabilities, and is the sum of all the entries for assets, less all the entries for liabilities, in the other changes in the volume of assets and liabilities account.

c. The third item is the change in net worth due to nominal holding gains and losses. This is the sum of the entries for nominal holding gains and losses for all assets, less the entries for nominal holding gains and losses on all liabilities, as recorded in the revaluation account. This can be broken down into the change in net worth due to neutral holding gains and losses and the change in net worth due to real holding gains and losses in an obvious manner.

Asset accounts

19.38 The identity linking opening and closing balance sheets holds for assets (or liabilities) in total, for every separate class of asset (or liability), and indeed for every individual asset (or liability). An asset (or liability) account describes the changes in the stock of an asset (or liability) or class of assets (or liabilities) from one balance sheet to the next, itemizing which changes are due to capital transactions, which to financial transactions and which to other changes in volume and revaluation. Asset accounts are described in chapter 14 on Balance sheet.

6. Consolidating the accounts

19.39 Although it is not usual to present the accounts in a fully consolidated form, it is useful from a pedagogical point of view to consider what results from a full consolidation of the accounts.

Consolidating the current accounts

19.40 All the items in table 19.1 relating to the distribution and redistribution of income appear on both sides of the account. Their inclusion permits the derivation of significant balancing items but it is also possible to consider what entries are left if they are eliminated by consolidation. In fact what remains are the entries in the goods and services columns plus the entries for saving and the current external balance. This result can be seen from the following:

a. Revenues

- Imports 499;
- Output 3 617;
- Taxes on products 141;
- Subsidies on products -8;
- Total 4 249;

b. Expenditures

- Exports 540;
- Intermediate consumption 1 881;
- Final consumption 1 414
- Saving 427;
- Current external balance -13;
- Total 4 249.

19.41 The current external balance (-13) is equal to the external balance of goods and services (-41) plus the external balance of earned and transfer income coming from the rest of the world (28). If imports, exports and the external balance of goods and services are removed from the consolidation just described, the following result can be derived:

Output 3 617

plus taxes on products 141

minus subsidies on products 8

minus intermediate consumption 1 881

(result 1 869)

equals

final consumption 1 414

plus saving 427

plus external balance of earned and transfer income 28.

19.42 The first part of this identity is the definition of income generated in the economy. If the external balance of earned and transfer income is regarded as an analogue to saving generated within the domestic economy, this identity can be seen as the simple economic concept that income is equal to consumption plus saving.

Consolidating the accumulation accounts

19.43 When the capital and financial accounts are consolidated, all the entries in the financial account are eliminated and the entries for net lending or borrowing that appear in each account cancel. All that is left is:

acquisitions less disposals of produced non-financial assets (= gross capital formation) (414)

equals

saving (427)

plus the current external balance (-13).

Consolidating the rest of the world account

19.44 Looking only at the capital and financial account of the rest of the world:

the current external balance (-13)

plus the acquisitions less disposals of non-produced non-financial assets (0)

plus capital transfers receivable (4)

minus capital transfers payable (1)

equals net lending or borrowing (-10).

19.45 Combining this identity with the previous one reduces to:

the acquisitions less disposals of produced non-financial assets (= gross capital formation) (414)

plus the acquisitions less disposals of non-produced non-financial assets (0)

equals

saving (427)

plus net lending or borrowing to the rest of the world (-10)

minus capital transfers payable to the rest of the world (4)

plus capital transfers receivable from the rest of the world (1).

In other words investment is equal to saving generated from within the total economy or drawn in from the rest of the world.

C. The macroeconomic aggregates in the SNA

1. The GDP identities

19.46 Rearranging the order of items appearing in the goods and services account leads to the most familiar definitions of GDP:

Output (3 617)

minus intermediate consumption (1 881)

plus taxes less subsidies on products (141 - 8)

equals

final consumption (1 414)

plus the acquisitions less disposals of produced non-financial assets (= gross capital formation) (414)

plus exports (540)

minus imports (499)

equals GDP (1 869).

There are thus two separate ways in which GDP can be derived:

a. the production measure of gross domestic product (GDP) is derived as the value of total output less total intermediate consumption plus any taxes less subsidies on products not already included in the value of output,

b. the expenditure measure of gross domestic product (GDP) is derived as the sum of expenditure on final consumption plus gross capital formation plus exports less imports.

19.47 The production measure of GDP can also be expressed as value added adjusted to ensure all taxes less subsidies on products are included. As described in chapter 8 on Earned income accounts, value added can be viewed as the elements comprising income: remuneration of employees, operating surplus, mixed income and other taxes less subsidies on production. If separate estimates are available of these components, then a third way of compiling GDP is possible, that is, from the income side. Because other taxes less subsidies on production are included in value added and taxes less subsidies on products are to be included also, the two tax items can be replaced by the term that is the sum of them both, taxes less subsidies on production and imports.

GDP (1 869)

equals

remuneration of employees (1 150)

plus gross operating surplus (467)

plus gross mixed income (61)

plus taxes less subsidies on production and imports (191).

The third way in which GDP can be defined is thus

c. the income measure of gross domestic product (GDP) is derived as the total income earned through the production of goods and services in the economy, consisting of remuneration of employees plus gross operating surplus plus gross mixed incomes plus taxes less subsidies on both production and imports.

2. A note on the valuation of output

19.48 In chapter 7 on Production account, it is explained that the preferred measurement of output in the in the integrated framework of the SNA is basic prices. At basic prices, the value of output excludes all taxes on products and includes all subsidies on products. It includes all other taxes on production and excludes all other subsidies on production. However, the data sources in some countries may not permit this valuation to be followed. In this case, output will be valued at producers' prices. All taxes on both products and production (possibly excluding any VAT type taxes) will be included in the value of output and all subsidies on both products and production will be excluded.

19.49 For this reason, the definition of GDP from the production side given above includes the phrase "plus any taxes less subsidies on products not already included in the value of output". When output is valued at producers' prices, there will be no further taxes on products to add in (except possibly VAT type taxes); they will be already included in the measure of output (and similarly subsidies on products will already be deducted). In this case, GDP may be defined as the production measure of gross domestic product (GDP) is derived as the value of output at producers' prices less intermediate consumption. When output is measured at basic prices (as preferred in the integrated framework of the SNA and as followed in the numerical example) the definition can be rephrased as the production measure of gross domestic product (GDP) is derived as the value of output at basic prices less intermediate consumption plus taxes less subsidies on products.

3. Gross and net domestic product

19.50 While the third definition of GDP is correct both economically and statistically, it is held not to be the best measure of income. Income is usually defined as the amount that can be consumed while keeping the level of capital intact. (For further discussion on this see the introduction to chapter 9 on Transfer income accounts.) It is for this reason that the items depreciation and depletion are so important in the accounts and appears in every account as the difference between balancing items on a gross and net basis. To measure domestic production on a net basis, it is necessary:

a. to deduct depreciation and depletion from the production measure of GDP,

b. to replace gross capital formation by net capital formation, and subtract depletion, in the expenditure measure of GDP,

c. to replace gross operating surplus by net operating surplus and gross mixed income by net mixed income in the income measure of GDP.

19.51 Each deduction from GDP is equivalent because the difference between gross and net capital formation is the deprecation, while depletion is explicitly subtracted as a stand-alone item. Both items also represent the difference between the sum of operating surplus and mixed income on a gross basis as opposed to a net basis. Thus, net domestic product (NDP) is defined as gross domestic product (GDP) less depreciation and less depletion.

NDP (1 617)

equals

GDP (1 869)

minus depreciation (222)

minus depletion (30).

4. Gross and net national income

19.52 In some countries, border or seasonal workers may have a significant effect on the amount of remuneration of employees that is either payable abroad or receivable from abroad. Remuneration earned abroad but repatriated to the country where the employee is resident (as opposed to where he or she works) adds to the

income of households available for consumption. The concept of national income as opposed to domestic production is thus another key aggregate of the integrated framework of the SNA. As well as labour income from abroad in the form of remuneration of employees, income earned abroad on capital, especially financial capital, in the form of property income, is included in national income as well as any taxes less subsidies on production and imports payable by non-residents. Similar payments flowing out of the total economy to the rest of the world have to be deducted from GDP to reach national income.

19.53 ***Gross national income (GNI) (B5g) is the total income earned by all residents within an economic territory during an accounting period. It is equal to gross domestic product plus earned income receivable from abroad minus earned income payable abroad.*** In the terms of an equation,

GNI (1 879)

equals

GDP (1 869)

plus remuneration of employees receivable from abroad (6)

plus property income receivable from abroad (44)

plus taxes less subsidies on production receivable from abroad (0)

minus remuneration of employees payable abroad (2)

minus property income payable abroad (38)

minus taxes less subsidies on production and imports payable abroad (0).

19.54 As mentioned above, an income concept is better measured after deducting depreciation and depletion, so Net national income (NNI) is defined as GNI less depreciation and depletion.

NNI (1 627)

equals

GNI (1 879)

minus depreciation (222)

minus depletion (30).

5. National disposable income

19.55 A further step in examining the impact of the rest of the world on the national economy is to consider current transfers receivable from abroad and those payable abroad. Transfers receivable from abroad include remittances from nationals working abroad for long enough (more than one year) to be treated as resident elsewhere. However, like remuneration of employees payable from abroad, these transfers from non-residents can have a major impact on the resources available to the national economy. Overseas assistance, other than development assistance for capital projects, is also shown here. As before, transfers payable abroad must be deducted in moving from national income to national disposable income.

19.56 National disposable income, more often than domestic product and national income, is usually shown on a net basis. Net national disposable income (NNDI) is defined as net national income (NNI) plus current transfers receivable from abroad less current transfers payable abroad. In equation terms,

NNDI (1 589)

equals

NNI (1 627)

plus current transfers receivable from abroad (17)

minus current transfers payable abroad (55).

D. An example set of integrated sequence of economic accounts

19.57 The T accounts shown in table 19.1 and 19.2 can be extended to cover all the sectors of the economy and as much detail as required in the accounts. Such an extended presentation is referred to as the sequence of (integrated) economic accounts. An example is tables 19.4 and 19.5 which show, simultaneously, the general accounting structure of the SNA sequence of economic accounts and present a set of data for the individual institutional sectors, the economy as a whole and the rest of the world.

19.58 In order to simplify this table while still having it comprehensive, classifications of sectors, transactions and other flows, assets and liabilities are at the highest level of aggregation compatible with understanding the structure of the SNA sequence of economic accounts. However, columns and rows can be subdivided to introduce subsectors or more detailed classifications of transactions and other flows, assets and liabilities.

1. Institutional sector accounts

Current accounts

19.59 As an example of the institutional sectors current accounts, consider the column for non-financial corporations.

19.60 The production account shows output (2 808) on the right-hand side, intermediate consumption (1 477) and value added (1 331 gross, 1 144 net, the difference referring to depreciation and depletion (187), on the left-hand side). Value added, the balancing item of the production account, appears again in the same row as a revenue of the generation of earned income account.

19.61 The expenditures of the generation of earned income account (remuneration of employees (986) and other taxes (88) less subsidies on production (35)) are shown on the left-hand side, the balancing item being net operating surplus (105), which appears again as a revenue of the allocation of earned income account.

19.62 In the allocation of earned income account, property income receivable (72), along with operating surplus is recorded on the right-hand side, and property income payable (134) is recorded on the left-hand side. It also shows, as a negative item related to rent, the reallocation of depletion to the legal owner of natural resources in proportion to its economic ownership of the resources (-18). The balancing item is the net balance of earned incomes (61), which appears again as a revenue of the income transfers other than social transfers in kind account. The income transfers other than social transfers in kind account shows current transfers, payable (98) and receivable (72), leading to the balancing item of net disposable income (35). This item, which can also be described as the undistributed income of non-financial corporations, appears as a revenue in the use of income account.

19.63 The only transaction appearing in the use of income account for the corporations' sectors is an entry for the change in pension and non-pension entitlements. In this case the entry has a value of zero so the balancing item of the use of income account, saving, has the same value as disposable income.

19.64 The accounts for other institutional sectors may be read the same way, the relevant transactions varying according to the sector involved.

The use of income account

19.65 The presentation of the two ways in which disposable income is associated with final consumption, one taking account of the redistribution via social transfers in kind leading to actual consumption and the other showing final consumption expenditure to disposable income directly, is simplified in table 19.4. The social transfers in kind account and the use of income adjusted for social transfers in kind account are merged with the use of disposable income account as follows. Disposable income, gross, is 25 for financial corporations, 335 for general government, 40 for NPISHs and 1 219 for households. Final consumption expenditure is 2 for financial corporations (in this case restricted to the central bank), 362 for government, 35 for NPISHs and 1 015 for households. Total consumption expenditure is 1 414. Saving is given by disposable income less final consumption expenditure.

Table 19.4: Summary current account with sector details – expenditures

Expenditures

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
P7	Imports of goods and services								499	499
P71	Imports of goods								392	392
P72	Imports of services								107	107
P6	Exports of goods and services							540		540
P61	Exports of goods							462		462
P62	Exports of services							78		78
P1	Output								3 617	3 617
P11	Market output								3 075	3 075
P12	Output for own final use								147	147
P13	Non-market output								395	395
P2	Intermediate consumption	1 477	52	220	115	17	1 881			1 881
D21	Taxes on products								141	141
D31	Subsidies on products (-)								- 8	- 8
B1g	Value added, gross / Gross domestic product	1 331	94	138	155	18	1 869			1 869
P51d	Depreciation	157	12	27	23	3	222			222
P8	Depletion	30			0		30			30
B1n	*Value added, net / Net domestic product*	1 144	82	111	132	15	1 617			1 617
B11	*External balance of international trade in goods and services*							- 41		- 41
	Generation of earned income account									
D1	Remuneration of employees	986	44	98	11	11	1 150			1 150
D2	Taxes on production and imports						235			235
D21	Taxes on products						141			141
D29	Other taxes on production	88	4	1	0	1	94			94
D3	Subsidies						- 44			- 44
D31	Subsidies on products						- 8			- 8
D39	Other subsidies on production	- 35	0	0	- 1	0	- 36			- 36
B2g	Operating surplus, gross	292	46	39	84	6	467			467
B3g	Mixed income, gross				61		61			61
P51d1	Depreciation on gross operating surplus	157	12	27	15	3	214			214
P51d2	Depreciation on gross mixed income				8		8			8
P81	Depletion on gross operating surplus	30			0		30			30
P82	Depletion on gross mixed income				0		0			0
B2n	*Operating surplus, net*	105	34	12	69	3	223			223
B3n	*Mixed income, net*				53		53			53
	Allocation of earned income account									
D1	Remuneration of employees							6		6
D2	Taxes on production and imports									0
D3	Subsidies									0
D4	Property income	134	168	42	41	6	391	44		435
D42d (-)	Depletion borne by the legal owner	- 18			0		- 18			- 18
B5g	Balance of earned incomes, gross / National income, gross	248	27	216	1 381	7	1 879			1 879
B5n	Balance of earned income, net / National income, net	61	15	189	1 358	4	1 627			1 627
	Income transfers other than transfers in kind account									
	Current transfers	98	277	248	582	7	1 212	17		1 229
D5	Current taxes on income, wealth, etc.	24	10	0	178	0	212	1		213
D61	Social contributions less service charges				333		333	0		333
D62	Social benefits other than social transfers in kind	62	205	112	0	5	384	0		384
D7	Other current transfers	12	62	136	71	2	283	16		299
B6g	Disposable income, gross	222	25	335	1 219	40	1 841			1 841
B6n	*Disposable income, net*	35	13	308	1 196	37	1 589			1 589
	Use of disposable income account									
P3	Final consumption expenditure		2	362	1 015	35	1 414			1 414
D8	Adjustment for the change in pension and non-pension entitlements	0	11	0		0	11	0		11
B8g	Saving, gross	222	12	- 27	215	5	427			427
B8n	*Saving, net*	35	0	- 54	192	2	175			175
B12	*Current external balance*							- 13		- 13

Table 19.4 (cont): Summary current account with sector details – revenues

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world
P7	Imports of goods and services							499
P71	Imports of goods							392
P72	Imports of services							107
P6	Exports of goods and services							
P61	Exports of goods							
P62	Exports of services							
P1	Output	2 808	146	358	270	35	3 617	
P11	Market output	2 808	144	0	123	0	3 075	
P12	Output for own final use	0	0	0	147	0	147	
P13	Non-market output		2	358		35	395	
P2	Intermediate consumption							
D21	Taxes on products						141	
D31	Subsidies on products (-)						- 8	
	Generation of earned income account							
B1g	Value added, gross / Gross domestic product	1 331	94	138	155	18	1 869	
B1n	*Value added, net / Net domestic product*	1 144	82	111	132	15	1 617	
D1	Remuneration of employees							
D2	Taxes on production and imports							
D21	Taxes on products							
D29	Other taxes on production							
D3	Subsidies							
D31	Subsidies on products							
D39	Other subsidies on production							
	Allocation of earned income account							
B2g	Operating surplus, gross	292	46	39	84	6	467	
B3g	Mixed income, gross				61		61	
B2n	*Operating surplus, net*	105	34	12	69	3	223	
B3n	*Mixed income, net*				53		53	
D1	Remuneration of employees				1 154		1 154	2
D2	Taxes on production and imports			235			235	
D3	Subsidies			- 44			- 44	
D4	Property income	72	149	46	123	7	397	38
D42dep (-)	Depletion borne by the legal owner			- 18			- 18	
	Income transfers other than transfers in kind account							
B5g	Balance of earned incomes, gross / National income, gross	248	27	216	1 381	7	1 879	
B5n	*Balance of earned income, net / National income, net*	61	15	189	1 358	4	1 627	
	Current transfers	72	275	367	420	40	1 174	55
D5	Current taxes on income, wealth, etc.			213			213	0
D61	Social contributions less service charges	66	213	50	0	4	333	0
D62	Social benefits other than social transfers in kind				384		384	0
D7	Other current transfers	6	62	104	36	36	244	55
	Use of disposable income account							
B6g	Disposable income, gross	222	25	335	1 219	40	1 841	
B6n	*Disposable income, net*	35	13	308	1 196	37	1 589	

Table 19.5: Summary of the accumulation accounts and balance sheets with sector details – assets and changes in assets

Changes in assets

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
	Capital account									
NF1	Acquisitions less disposals of produced non-financial assets (excluding natural resources)	141	- 4	11	30	2	180			180
NF11	Gross fixed capital formation	257	8	35	44	5	349			349
NF12	Depreciation (-)	- 142	- 12	- 27	- 20	- 3	- 204			- 204
NF13	Changes in inventories	24	0	0	1	0	25			25
NF14	Acquisitions less disposals of valuables	2	0	3	5	0	10			10
NF2	Acquisitions less disposals of non-produced non-financial assets (excluding natural resources)	- 1	0	0	1	0	0	0		0
NF3	Acquisitions less disposals of natural resources	- 8	0	- 16	5	1	- 18			- 18
NF31	Gross fixed capital formation	23	0	0	4	0	27			27
NF32	Depreciation (-)	- 15	0	0	- 3	0	- 18			- 18
NF33	Changes in inventories	2	0	0	1	0	3			3
NF34	Acquisitions less disposals of non-produced natural resources	- 6	0	2	3	1	0			0
NF35	Depletion (-)	- 12		- 18	0		- 30			- 30
D9r	Capital transfers, receivable									
D9p	Capital transfers, payable									
B9	*Net lending (+) / net borrowing (–)*	- 80	- 3	- 77	174	- 4	10	- 10		0
	Financial account									
	Net acquisition of financial assets	60	170	16	189	2	437	48		485
F1	Monetary gold and SDRs		- 1				- 1	1		0
F2	Currency and deposits	16	8	0	64	2	90	11		101
F3	Debt securities	7	66	4	10	- 1	86	10		96
F4	Loans	19	53	3	3	0	78	4		82
F5	Equity and investment fund shares / units	10	28	3	66	0	107	12		119
F6	Insurance, pension and standardized guarantee schemes	1	7	1	39	0	48	0		48
F7	Financial derivatives and employee stock options	3	8	0	3	0	14	0		14
F8	Other accounts receivable/payable	4	1	5	4	1	15	10		25
	Other changes in the volume of assets and liabilities account									
	Total other changes in volume	18	- 1	1	0	0	18			18
K1-K6 AN1	Produced non-financial assets (excluding natural resources)	- 2	- 2	- 3	0	0	- 7			- 7
K1-K6 AN2	Non-produced non-financial assets (excluding natural resources)	- 2	0	1	0	0	- 1			- 1
K1-K6 AN3	Natural resources	20	0	3	0	0	23			23
AF	Financial assets and liabilities	2	1	0	0	0	3			3
	Revaluation account									
	Nominal holding gains and losses									
K7 AN	Non-financial assets	144	4	44	80	8	280			280
K7 AF	Financial assets and liabilities	8	57	1	16	2	84	7		91
	Neutral holding gains and losses									
K71 AN	Non-financial assets	101	3	32	56	6	198			198
K71 AF	Financial assets and liabilities	18	71	8	36	3	136	12		148
	Real holding gains and losses									
K72 AN	Non-financial assets	43	1	12	24	2	82			82
K72 AF	Financial assets and liabilities	- 10	- 14	- 7	- 20	- 1	- 52	- 5		- 57
	Stocks and changes in assets									
	Opening balance sheet									
AN	Non-financial assets	2 152	93	1 089	1 431	159	4 924			4 924
AF	Financial assets/liabilities	982	3 421	396	3 260	172	8 231	805		9 036
	Total changes in assets and liabilities									
AN	Non-financial assets	292	- 2	40	116	11	457			457
AF	Financial assets/liabilities	70	228	17	205	4	524	55		579
	Closing balance sheet									
AN	Non-financial assets	2 444	91	1 129	1 547	170	5 381			5 381
AF	Financial assets/liabilities	1 052	3 649	413	3 465	176	8 755	860		9 615

Table 19.5 (cont): Summary of the accumulation accounts and balance sheets with sector details – liabilities, net worth and changes in them

Changes in liabilities and net worth

Code	Transactions and balancing items	Non-financial corporations	Financial corporations	General government	Households	NPISHs	Total economy	Rest of the world	Goods and services	Total
	Capital account									
B8n	*Saving, net*	35	0	- 54	192	2	175			175
B12	*Current external balance*							- 13		- 13
NF1	Acquisitions less disposals of produced non-financial assets (excluding natural resources)									
NF11	Gross fixed capital formation								349	349
NF12	Depreciation (-)									
NF13	Changes in inventories								25	25
NF14	Acquisitions less disposals of valuables								10	10
NF2	Acquisitions less disposals of non-produced non-financial assets (excluding natural resources)									
NF3	Acquisitions less disposals of natural resources									
NF31	Gross fixed capital formation								27	27
NF32	Depreciation (-)									
NF33	Changes in inventories								3	3
NF34	Acquisitions less disposals of non-produced natural resources									
NF35	Depletion (-)									
D9r	Capital transfers, receivable	33	0	6	23	0	62	4		66
D9p	Capital transfers, payable	- 16	- 7	- 34	- 5	- 3	- 65	- 1		- 66
B101	Changes in net worth due to saving and capital transfers	52	- 7	- 82	210	- 1	172	- 10		162
	Financial account									
B9	*Net lending (+) / net borrowing (–)*	- 80	- 3	- 77	174	- 4	10	- 10		0
	Net acquisition of liabilities	140	173	93	15	6	427	58		485
F1	Monetary gold and SDRs	0	0	0	0	0	0	0		0
F2	Currency and deposits	0	65	37	0	0	102	- 1		101
F3	Debt securities	7	30	38	0	0	75	21		96
F4	Loans	21	0	9	11	6	47	35		82
F5	Equity and investment fund shares / units	83	22	0	0	0	105	14		119
F6	Insurance, pension and standardized guarantee schemes	0	48	0	0	0	48	0		48
F7	Financial derivatives and employee stock options	3	8	0	0	0	11	3		14
F8	Other accounts receivable/payable	26	0	9	4	0	39	- 14		25
	Other changes in the volume of assets and liabilities account									
	Total other changes in volume	0	0	2	1	0	3			3
K1-K6 AN1	Produced non-financial assets (excluding natural resources)									0
K1-K6 AN2	Non-produced non-financial assets (excluding natural resources)									0
K1-K6 AN3	Natural resources									0
AF	Financial assets and liabilities	0	0	2	1	0	3			3
B102	Changes in net worth due to other changes in the volume of assets and liabilities	18	- 1	- 1	- 1	0	15			15
	Revaluation account									
	Nominal holding gains and losses									
K7 AN	Non-financial assets	0	0	0	0	0	0			0
K7 AF	Financial assets and liabilities	18	51	7	0	0	76	15		91
B103	*Changes in net worth due to nominal holding gains/lo*	134	10	38	96	10	288	- 8		280
	Neutral holding gains and losses									
K71 AN	Non-financial assets	0	0	0	0	0	0			0
K71 AF	Financial assets and liabilities	37	68	13	5	3	126	22		148
B103	*Changes in net worth due to neutral holding gains/lo*	82	6	27	87	6	208	- 10		198
	Real holding gains and losses									
K72 AN	Non-financial assets	0	0	0	0	0	0			0
K72 AF	Financial assets and liabilities	- 19	- 17	- 6	- 5	- 3	- 50	- 7		- 57
B103	*Changes in net worth due to real holding gains/losse*	52	4	11	9	4	80	2		82
	Stocks and changes in liabilities and net worth									
	Opening balance sheet									
AN	Non-financial assets									
AF	Financial assets/liabilities	3 221	3 544	687	189	121	7 762	1 274		9 036
B90	*Net worth*	- 87	- 30	798	4 502	210	5 393	- 469		4 924
	Total changes in assets and liabilities									
AN	Non-financial assets									
AF	Financial assets/liabilities	158	224	102	16	6	506	73		579
B10	*Changes in net worth, total*	204	2	- 45	305	9	475	- 18		457
B101	*Saving and capital transfers*	52	- 7	- 82	210	- 1	172	- 10		162
B102	*Other changes in volume of assets*	18	- 1	- 1	- 1	0	15	0		15
B103	*Nominal holding gains/losses*	134	10	38	96	10	288	- 8		280
B1031	Neutral holding gains/losses	82	6	27	87	6	208	- 10		198
B1032	Real holding gains/losses	52	4	11	9	4	80	2		82
	Closing balance sheet									
AN	Non-financial assets									
AF	Financial assets/liabilities	3 379	3 768	789	205	127	8 268	1 347		9 615
B90	*Net worth*	117	- 28	753	4 807	219	5 868	- 487		5 381

The accumulation accounts

19.66 The accumulation accounts follow the sequence of current accounts for the institutional sectors. For example, net saving of households is 192. Households receive 23 and pay 5 as capital transfers. Thus the value of the changes in their net worth due to saving and capital transfers is 210. Households have 50 as acquisitions less disposals of produced assets (excluding produced natural resources) (30 as net after deduction of depreciation (20)), consisting of gross fixed capital formation of 44 (24 as net after deduction of depreciation (20)), changes in inventories (excluding produced natural resources) of 1, and acquisitions less disposals of valuables of 5. Their acquisitions less disposals of non-produced non-financial assets (excluding non-produced natural resources) are equal to 1. Looking at natural resources, acquisitions less disposals amount to 5, consisting of net fixed capital formation (1), changes in inventories (1) and acquisitions less disposals of non-produced natural resources (3). The net lending of households is 174. They incur financial liabilities (net) of 15 and acquire financial assets (net) of 189. Other changes in volume of assets and liabilities are -1. The value of the assets held by households increases by 96 due to changes in the prices of both non-financial assets (80) and financial assets (16); there are no nominal gains or losses on their liabilities, which means that all their liabilities are denominated in nominal values and probably in the national currency of the economy in question.

The balance sheets

19.67 The balance sheets are also part of the sequence of economic accounts. In order to see the relationships between the accumulation accounts and balance sheets, take general government as the example. The opening assets are 1 485 (1089 non-financial assets and 396 financial assets) and the opening liabilities 687, net worth thus being 798. The total value of non-financial assets increases by 40, which results from all changes in these assets recorded in the accumulation accounts: acquisitions less disposals of non-financial assets (-5), other changes in the volume of assets (1) and nominal holding gains and losses (44). Financial assets increase by 17 (net acquisition of financial assets (16), other volume changes (0), nominal holding gains (1)). On the right-hand side, liabilities increase by 102, which results again from all changes in liabilities recorded in the accumulation accounts (net incurrence of liabilities (93), other volume changes (2), revaluation of liabilities (7)). So the closing assets are 1 542 (1 129 + 413) and the closing liabilities are 789; closing net worth (753) shows a decrease over the year of 45. The sources of this change in net worth are summarized on the right-hand side of the account showing the change in balance sheets: changes in net worth due to saving and capital transfers (-82, see also the right-hand side of the capital account), due to other changes in volume of assets and liabilities (-1, see also the right-hand side of the other changes in volume of assets and liabilities account), and due to nominal holding gains or losses (38, see also the right-hand side of the revaluation account).

2. The rest of the world account

19.68 As explained earlier, the rest of the world accounts are presented from the viewpoint of the rest of the world. Imports of goods and services (499) are a revenue for the rest of the world, even though they represent an outflow from the national economy and exports (540) are an expenditure of the rest of the world. Thus imports appear on the right-hand side of the table and exports on the left. The external account of goods and services is shown at the same level as the production account for institutional sectors. The external balance of goods and services is -41. With a positive sign, it is a surplus of the rest of the world (a deficit of the national economy) and vice versa.

19.69 As explained in connection with table 19.3, the external balance on earned income is -10 and on transfer income is 38, giving a current external balance of -13.

19.70 Transactions of the accumulation accounts appear in the columns for the rest of the world when relevant (mainly capital transfers and financial transactions). The rest of the world columns show the assets and liabilities position of the rest of the world vis-à-vis the national economy (external assets and liabilities account). The row “changes in net worth due to saving and capital transfers” corresponds, for the rest of the world, to the current external balance and capital transfers.

3. The goods and services account

19.71 In the integrated economic accounts, the goods and services account is shown in a column, not in a row. It reflects the various transactions in goods and services that appear in the accounts of the institutional sectors. Intermediate consumption and final consumption appear as expenditures in the institutional accounts on the left-hand side of the accounts. For the goods and services account, they appear in the right-hand side column, even though the right-hand side is generally reserved for revenues and consumption is an expenditure. This device of using the opposite side of the account from normal gives a balance for the row for each of the items appearing in the goods and services account. On the revenues side of the table, the figures appearing in the column for goods and services are the counterparts of the uses made by the various sectors and the rest of the world: exports (540), intermediate consumption (1 881), final consumption expenditure or actual final consumption (1 414), gross fixed capital formation in produced non-financial assets (excluding produced natural resources) (349), gross fixed capital formation in produced natural resources (27), changes in inventories (excluding produced natural resources) (25), changes in inventories related to work-in-progress on produced natural resources (i.e., cultivated biological resources) (3) and acquisitions less disposals of valuables (10). On the expenditure side of the table, the figures in the column for goods and services are the counterparts of the revenues of the various sectors and the rest of the world: imports (499) and output (3 617). On the same side taxes less subsidies on products (133) are shown directly in the column for goods and services. They are a component of the value of the supply of goods and services that has no counterpart in the value of the output of any institutional sector.

4. The total economy column

19.72 The columns for the total economy remain to be explained. Except for taxes less subsidies on products and gross and net domestic product, the figures in these columns are simply the sum of the corresponding figures for the institutional sectors. The production account for the total economy includes, as revenues, output (that is, the total output of the economy (3 617)) and taxes less subsidies on products (133), the latter being the counterpart of the figure appearing on the left-hand side in the column for goods and services. The expenditures side of the production account for the total economy shows intermediate consumption (1 881) and domestic product at market prices (1 869 gross, 1 617 net). The latter is the sum of value added of the various sectors and taxes less subsidies on products. Domestic product then appears on the right-hand side as a revenue of the generation of earned income account for the total economy. Taxes less subsidies on products are shown again on the left-hand side in the column for total economy and on the right-hand side as a revenue of government (and the rest of the world if relevant). This double routing of taxes less subsidies on products is made in order to get domestic product, gross and net, directly in the overall accounts, as explained above.

19.73 The other items in the columns for the total economy are self-explanatory. Net national income at market prices (1 627) is shown directly as the sum of balance of earned incomes of the various sectors; national disposable income, national saving, etc. are also obtained directly.

E. Balancing the accounts

19.74 As explained in more detail in section E of chapter 4 on Flows, stocks and accounting rules, the accounting system underlying the SNA sequence of economic accounts derives from the following bookkeeping principles:

a. Vertical double-entry bookkeeping, which implies that each transaction leads to at least two entries, traditionally referred to as a credit entry and a debit entry, in the books of the transactor. As a consequence, net lending or net borrowing resulting from non-financial transactions is by definition equal to net lending or net borrowing resulting from financial transactions.

b. Horizontal double-entry bookkeeping, which implies that each transaction of a certain unit leads to a counterpart transaction of another unit. As a consequence, for any transaction, total receipts of all units, including receipts of non-resident units from resident units, are by definition equal to total payments of all units, including payments by non-resident units to resident units. This also holds for total supply of goods and services and total use of goods and services, as explained in chapter

15 on Supply and use tables and, more concisely, in paragraph 19.47.

c. Quadruple-entry bookkeeping, which basically combines the two principles above.

19.75 The first principle also ensures the fundamental identity of a unit's balance sheet, that is, the total value of assets equals the total value of liabilities plus net worth, i.e., net worth equals the sum of cumulative changes in net worth due to saving and capital transfers, cumulative changes in net worth due to other changes in assets and liabilities, and cumulative changes in net worth due to holding gains and losses. It also ensures, as explained in paragraph 19.32, that for a single type of asset (or liability and net worth) the difference between the opening and the closing value can be explained by the total value of the assets acquired, less the total value of those disposed of (including depreciation and depletion where appropriate) plus the value of other positive or negative changes in the volume of the assets and liabilities plus the value of the positive or negative nominal holding gains resulting from a change in the price of the asset.

19.76 The sequence of economic accounts can thus be seen as a fully consistent and closed accounting system guided by the quadruple-entry bookkeeping principle. From a conceptual point of view, all transactions and positions of a unit/sector add up, and for all transactions (stocks), total receipts (stocks of financial assets) of all agents are equal to total payments (stocks of liabilities).

19.77 This quadruple entry bookkeeping system is not just a theoretical notion. It provides a very powerful tool for checking the quality of the data used for the compilation of integrated framework of national accounts, by looking at the consistency of the source data in two ways. First, one can see whether the numbers for an institutional unit or sector are internally consistent, by checking whether they respect the traditional vertical double entry bookkeeping rules. In the sequence of economic accounts, this consistency is usually checked by comparing the balancing item from the capital account with the balancing item of the financial account. The other check concerns the consistency between total payments and total receipts, for each of the transactions (and positions), including total supply and total use of goods and services.

19.78 The compilation of national accounts typically involves the combination of information from a large variety of data sources. The type and quality of information available will depend on the country, but all countries use a mix of data derived from statistical surveys, administrative data sources, financial reports, etc. These data sources may relate to particular units or sectors, or may relate to particular sets of transactions, other flows or stocks. The source information available may also differ depending on the frequency (e.g., quarterly versus annual) and the timeliness of the relevant national accounts estimates.

19.79 These data sources used as input for the compilation of national accounts are often not fully in line with the standards of the integrated framework of the SNA, and adjustments may need to be made before integrating the results in the framework of national accounts. These adjustments may relate to differences in industry or sector coverage, conceptual differences with regard to the recording and valuation of the flows and stocks, and items that may be missing. In some cases adjustments can be made on the basis of counterpart information available from other data sources, but in other cases assumptions have to be made to fill these gaps.

19.80 The next step in the compilation process is to confront and balance the various pieces of information within the integrated frameworks of the national accounts, be it the sequence of economic accounts for institutional sectors, the supply and use tables, or the labour market tables, in order to ensure consistency in line with the above principles. As noted above, the various data sources consist of different types of information, have undergone different types of adjustments, and differ in quality. Therefore, the balancing process can be quite complex. It often involves weighting the relative quality of the various data sources, discussing possible reasons for any differences, making decisions using informed judgement on which information to use and simultaneously adjusting the information in the framework to arrive at full consistency. Often, this is an iterative process.

19.81 To arrive at full consistency is the ideal, but this is not the practice. Usually, countries manage to compile estimates which respect the horizontal double entry bookkeeping principle, although some countries do publish, for example, different estimates for GDP from the production perspective and GDP from the expenditure perspective (particularly for quarterly estimates), thus not fully respecting the equality of supply and use of goods and services. In addition, these countries may publish yet another estimate for GDP from an income perspective.

19.82 A more general phenomenon is that countries are not in a position to compile estimates which fully respect

the vertical double entry bookkeeping principle for all, or most of, the institutional sectors. As a consequence, one can observe differences between net lending or net borrowing resulting from non-financial transactions versus net lending or net borrowing resulting from financial transactions. These differences are usually framed and published as “statistical discrepancies”. If such discrepancies have a structural component, in the sense of being consistently positive or negative for a certain institutional sector, there should be continued research to resolve the inconsistencies and further improving the estimates.

Chapter 20: Elaborating the accounts

A. Introduction

20.1 The previous chapters explain both the accounting aspects of the integrated framework of the SNA (i.e., the sequence of economic accounts as well as the supply and use tables and more detailed tables on the inputs used in the production of goods and services, labour and capital). This chapter builds on this information to describe how to elaborate the SNA in a way that better suits the needs of users.

20.2 Historically, the national accounts have typically been produced on an annual basis. Annual series are adequate to identify long term shifts in the economy, but to assess what is happening in the short term, higher frequency statistics – typically quarterly – fill the gap between short term indicators – typically monthly – and fully elaborated annual accounts and tables. Section B provides an overview of the key issues that need to be taken into consideration in producing quarterly national accounts.

20.3 Another important dimension of the accounts is that of regional accounts, where a region is typically a subdivision of a country. These accounts are particularly important where there are significant differences in economic circumstances between regions, and are useful for regional economic planning and development. An overview of aspects of regional accounting is provided in Section C.

20.4 Although no account or table in the previous chapters has illustrated it, the prime use of the SNA is in a time series context so that users of the accounts can assess how the economy is evolving and developing over time. To meet this requirement, it is essential that national accounts compilers maintain high-quality time series. Aspects associated with this are discussed in Section D.

20.5 A further issue to be considered in the compilation of the national accounts is that of high inflation. A method of measurement which gives acceptable approximate measures in more or less normal conditions may no longer be acceptable for countries with significant inflation. Section E describes how to handle high inflation when compiling the national accounts.

20.6 To explain all of the topics covered in this chapter in detail would require far more extensive discussion than is appropriate for the SNA, particularly detail regarding practical compilation issues. Accordingly, this chapter provides summary information with references, where appropriate, to manuals and compilation guidance where more detail can be found.

B. Quarterly national accounts

1. Introduction

20.7 The main purpose of quarterly national accounts (QNA) is to provide a picture of current economic developments that is timelier than that provided by annual national accounts (ANA), and more comprehensive than that provided by individual short term indicators. In addition, as with the annual accounts, QNA provide a coordinating conceptual framework for the design and collection of economic source data and a framework for identifying major gaps in the range of available short term indicators.

20.8 The QNA adopt the same concepts, principles, definitions, and structure as the ANA. In principle, the QNA cover the entire integrated framework of national accounts. In practice, the constraints of data availability, time, and resources, including collection costs, mean that QNA are usually less complete than ANA. However, the compilation of the QNA should not be considered in isolation but should be coherent and consistent with the ANA. In this regard, the benchmarking of QNA series to the relevant ANA series, as described below, is an important feature of QNA compilation.

20.9 The coverage of the QNA system in a country usually evolves. In the initial stage of development, only estimates of GDP with a split by industry and/or type of expenditure may be derived. Gross national income (GNI), saving, and consolidated accounts for the economy often follow next. Extensions can be made as the use of the system becomes more established, data sources become available, and users become more familiar with the data. Additional breakdowns of GDP, institutional sector accounts and supply and use tables may be added.

20.10 Detailed information on compiling QNA is available in International Monetary Fund's *Quarterly National Accounts Manual* (2017) and the material in this section is a summary of information contained in the Manual. Eurostat's *Handbook on Quarterly National Accounts* (2013) also provides guidance on

the compilation of quarterly accounts.

2. Time of recording

20.11 The general time of recording principle in the integrated framework of the SNA is the accrual basis. This principle applies to both annual and quarterly national accounts. Under the accrual principle, flows are recorded at the time economic value is created, transformed, exchanged, transferred, or extinguished. The application of accrual principles may present specific practical and conceptual problems for quarterly flows. These situations typically arise when the monthly or quarterly statistics on which the QNA are based record flows referring to economic events that accrue to periods longer (or shorter) than a calendar month or quarter. For example, wage arrears may be recorded in a particular month although they may accrue to several past payroll periods. The accrual recording is more complicated when there is a significant delay between the reporting period and the full-accrual event, which may give rise to revisions of quarterly estimates.

20.12 Transactions that have a fixed relation to a particular period (e.g., accrued in a previous period or accrued over a number of accounting periods) should be allocated to the periods in which they accrued. Examples are taxes on incomes and products that may be collected in a subsequent period and employee vacation leave entitlements that build up over time and are paid when the vacation is taken. If source data are on an accrual basis then adjustments are not likely to be needed, but if they are on some other basis (e.g., cash) then adjustments should be made. For example, in the case of taxes on income and production an appropriate time shift of the tax receipts may be an approach to obtain data on a quarterly basis.

20.13 Uncertainty in the amount to be allocated is another element that may complicate the compilation of quarterly data on an accrual basis. For example, the amount of a tax that is paid at the end of the year may not be known at the beginning of the year. In such cases, initial estimates based on the expected amounts should be calculated, and replaced when actual amounts are known, respecting the coherence between the QNA and ANA. Similar uncertainty exists in the allocation of output of expected crops.

20.14 Work-in-progress concerns production that goes beyond one period and the measurement of such production must be split into separate periods. Because of the shorter accounting period, these difficulties are relatively more significant for the QNA than for the ANA. In the QNA, work-in-progress should be recorded for economic activities in which the production cycle goes beyond the quarter. Work-in-progress can be particularly important for industries such as agriculture, manufacturing of ships and airplanes, and construction activities. See chapter 7 on Production account and chapter 11 on Capital account for more discussion on the measurement of work-in-progress.

3. Definitions involving a year or more

20.15 The qualifying criterion for a fixed asset is that it should be used in production for more than one year. For reasons of consistency between the QNA and ANA, this period is maintained even for quarterly accounts. Similarly, the distinction between short-term and long-term in the classification of financial assets remains one year in the QNA.

4. Coverage of quarterly national accounts

20.16 It is possible in principle to compile the whole sequence of economic accounts, including balance sheets, on a quarterly basis. The most common sets of QNA, though, are for the goods and services account, the earned income components of value added, government expenditure, the financial account and the balance sheet for financial assets and liabilities. The quarterly goods and services account should also be compiled in volume terms.

5. Measuring GDP and its components

20.17 Measurement of GDP constitutes a core part of the QNA. As explained in chapter 19 on Summarizing, integrating and balancing the accounts, there are three approaches to measuring GDP: (i) the production approach, (ii) the expenditure approach, and (iii) the income approach.

20.18 The various approaches use specific source data and allow a distinct perspective on development and

level of GDP by providing different breakdowns of GDP. They also facilitate cross-checking of data as, conceptually, the three measures should provide the same estimate of GDP. Therefore, it is recommended that countries estimate quarterly GDP using at least two of the three approaches.

20.19 The production approach is widely used for measuring quarterly GDP, in part because of a traditional focus in many countries on short term statistics on indicators of production, which can be used as inputs for QNA compilation. This approach involves calculating output, intermediate consumption, and value added at current prices as well as in volume terms by kind of economic activity. In most countries, output data are reasonably well covered for manufacturing, but the coverage of construction and services is usually less comprehensive. Components missing from output, intermediate consumption, and value added are typically estimated using ratios that reflect fixed coefficients; for example, intermediate consumption may be assumed to be in a fixed proportion to output in the short term. Single indicator-based estimates will be biased to the extent that the ratios vary with factors such as seasonal effects, capacity utilisation, input composition, technological change, and productivity trends.

20.20 The expenditure approach usually has two strong pillars of quarterly data: namely, (international) merchandise trade and government consumption. The other categories – in particular, household final consumption – are often less well covered. The major components of external transactions are usually available from the balance of payments and through merchandise trade statistics that often have a strong basis in comprehensive data collection for customs purposes. Data on government consumption can be derived from government administrative data, but directly observed data on fixed capital formation and, in particular, changes in inventories may be lacking. Nevertheless, it may still be possible to derive a useful split of GDP by categories of expenditure. For example, if GDP is estimated using the production approach and the compiler can estimate key expenditure components using available sources, then the missing components may be presented as a residual. These could be reduced over time if more expenditure data becomes available. One such missing component may be changes in inventories, because quarterly source data are often unavailable, or otherwise incomplete or inadequate. Although not an independent check of the GDP estimates, incomplete estimates of GDP by categories of expenditure (i.e., with some components derived as a residual) are useful for analysis in addition to providing some plausibility checks of GDP.

20.21 The expenditure approach provides particularly useful data for business-cycle and macroeconomic policy analysis and for forecasting. Also, this approach is typically most useful for policy reasons because, over the short term, demand can generally be more easily influenced than supply.

20.22 The income approach avoids some of the problems that may arise in using the production and expenditure approaches, such as the reliance on fixed ratios used in production data. The income approach may have a sound underpinning in statistics on the remuneration of employees or in administrative data on this remuneration (for instance, for social security purposes). Quarterly observations of operating surplus/mixed income are often unavailable although the increasing use of business accounting software is leading to the wider availability of income data on a quarterly basis, even for many small businesses in the formal sector. Even if income data are incomplete, it may still be possible to derive an income split where one of the categories (usually gross operating surplus) is derived as a residual. The distribution of earned income from GDP provides a useful alternative perspective on economic development. The income approach also provides necessary data for compiling the distribution of income accounts in the sequence of economic accounts.

20.23 The weaknesses of the various methods for compiling quarterly GDP can be mitigated by combining production and expenditure data using the product flow method. This method is based on the fundamental national accounting identity shown in the goods and services account and supply and use tables. The compilation of supply and use tables on a quarterly basis using the structures derived from the annual supply and use tables provide a coherent framework for estimating quarterly GDP in both current price and volume terms. However, not all the required data are likely to be available on a quarterly basis and various assumptions using fixed ratios are required. Nonetheless, quarterly supply and use tables can provide a key tool for the compilation of the QNA or, as a minimum, a validation tool to help improve the QNA. Supply and use tables are described in detail in chapter 15.

20.24 Compilers of quarterly GDP should ensure that the informal economy is covered, although it may not be well represented in source data. A common assumption in the QNA is that informal activities move together with formal ones. This assumption is not always plausible across time, particularly in countries with large shares of informality undergoing rapid changes. In such cases, compilers should periodically reassess the ratio between informal and formal activities.

20.25 As discussed in the introductory chapter 1, NDP measures are conceptually superior to measures of GDP,

but they may be more difficult to compile in practice because of the need for estimates of depreciation and depletion. Nonetheless, compilers of QNA are encouraged to compile estimates of NDP in addition to GDP. Even when separate quarterly estimates of depreciation and depletion are unavailable, the extrapolation and interpolation of statistics discussed below can be applied to annual estimates. As these components tend to be reasonably stable in the shorter term, they lend themselves quite readily to this approach.

6. Quarterly accounts by institutional sector

20.26 Countries are encouraged to compile quarterly institutional sector accounts. These could be introduced simultaneously or, more commonly, be gradually developed in several stages. Accounts for the general government and the financial corporations sectors may be introduced first because of the availability of source data, the analytical usefulness of the statistics, and the desirability to have the data in a national accounting framework that would allow these sectors to be linked to the rest of the economy.

20.27 On the other end of the spectrum, separate quarterly data for the households and NPISHs sectors are usually more difficult to obtain, and these sectors may be combined in the QNA. In the absence of direct data, indicators, such as retail sales, can be used to estimate particular components. In the absence of any source data of sufficient quality, these sectors could initially be calculated as a residual. However, given the importance of the household sector, particularly distribution of income accounts, for the analysis of material well-being, compilers are encouraged to develop data sources that would enable the compilation of quarterly accounts for the household sector for at least the distribution of income accounts.

20.28 Financial accounts by institutional sector may be easier to implement than the distribution and use of income accounts and the capital account, because data on transactions and stocks of financial assets or liabilities by counterpart sectors are often available as a by-product of regulation or monitoring of the financial sector.

20.29 A helpful principle in compiling institutional sector accounts is making use of counterparty information: that is, in any transaction involving two parties, information can be collected from the party from which it can be most efficiently collected. For instance, data on interest payable by government to households can be obtained from one or a relatively small number of government agencies, rather than many households. Counterparty information becomes particularly important in a quarterly context when there are more likely to be gaps in data. One issue to be considered is that data providers may not always be able to provide data on the institutional classification of the counterparts, so some estimation may be required.

20.30 As previously mentioned, the income approach to measuring GDP is a foundation for the distribution of income accounts by institutional sector. The availability of data on GDP by earned income component and by institutional sector enables the earned income accounts to be completed by institutional sector. Thus, countries that compile quarterly estimates of GDP using the income approach typically have better developed quarterly accounts by institutional sector.

20.31 Data for estimates of capital formation by institutional sector should be collected from the purchaser rather than the supplier of the capital, as the supplier may not know what institutional sector is acquiring the assets. These estimates are an important component of the capital account. For institutional sector data, it is necessary to cover the second-hand assets. While for the total economy transactions in existing assets largely cancel out (except for transactions with non-residents, which can be obtained from trade and balance of payments statistics, and sales of used vehicles from businesses and governments to households). The same considerations apply to the stocks of non-financial assets for balance sheets. Similar to the stocks for the whole economy, they are likely to be stable in aggregate, although transactions in second-hand assets may be a more significant issue.

20.32 The financial accounts and the financial components of the balance sheets are usually among the more complete institutional sector data. Balance sheet data are often already collected from financial corporations. If the counterparts in each transaction, or financial asset or liability position are classified by institutional sectors, there is a strong basis for compiling the data for all the sectors, not only the financial corporations themselves. In addition, data from the balance of payments and the international investment position (IIP) would show transactions and financial asset and liability positions between non-residents and residents, which provide another critical element in compiling financial accounts for institutional sectors.

20.33 Attention should also be paid to financial transactions and stocks of financial assets and liabilities not

included in financial sector data and balance of payments and IIP data, such as household equity in corporations, or particular types of liabilities of non-financial corporation. In these cases, stock exchanges and security holding databases may provide additional information.

20.34 If the accounts are derived independently, net lending/net borrowing for both the capital account and the financial account will act as checks on each other. Alternatively, if only one account is available, the balancing item can be used as a starting point for compiling the other. For a more general discussion on balancing the accounts, see chapter 19 on Summarizing, integrating and balancing the accounts.

7. Source data issues

20.35 QNA data sources are generally more limited in detail and coverage than those available for the annual estimates. QNA data sources need to be more timely than the data for the annual estimates, a factor that could affect data availability and may increase data collection costs. As a result, QNA compilation may rely on indicators that best capture the movements in the target variable in the past and in the future. Therefore, the basic principle in selecting and developing sources is to obtain indicators that best reflect the economic activity being measured. In some cases, source data are available in a form ready for use in compiling QNA with little or no adjustment. In other cases, the source data may differ substantially from the ideal and will need to be adjusted. These adjustments may typically be determined using ratios established in benchmark years for which additional data sources – such as the results of more comprehensive and detailed surveys or censuses – may be available. In these cases, the QNA estimates are anchored to these main benchmark years and the regular source data are used as indicators to update the benchmark estimates (extrapolation). See section D for more information on extrapolation.

20.36 The choice of a suitable indicator is based on the assumption that it is able to reflect the changes in the target variable. However, these indicators should be reviewed on a regular basis because the economic conditions (e.g., production relationships or price relationships of the variable) may have changed over time. The suitability of an indicator must first be assessed qualitatively by examining the similarities and differences with the target variable in terms of scope, definitions, frequency, coverage, and so forth. The most desirable indicators differ only slightly from those used in ANA, for example, by being based on a sound sample but with less detailed data. Less satisfactory are indicators that cover only a part of the total, such as the key products or a subset of producers in an industry. However, if these indicators display growth rates that are consistent with the variable being measured, then they could be quite useful. Even less satisfactory are indicators that measure a variable related to the process or population of the target variable, but less directly, such as labour inputs as an indicator of the output of market services.

20.37 Indicators that apply past trends or measure a variable that is connected to the target variable only by a behavioural relationship or statistical correlation should be avoided, because the underlying relationships can be expected to be less stable than is the case of an indicator with a direct intrinsic relationship to the target variable.

20.38 The quality of source data for QNA can be assessed by comparing growth rates derived from the sum of four quarter estimates compiled using the QNA source data with those derived from annual estimates (when the annual estimates are compiled from independent, higher-quality, source data). This should be done before the quarterly estimates are benchmarked to the annual estimates, as discussed below. If there are significant discrepancies, then ways of making improvements to the source data, or improvements in the way the source data is used in the QNA compilation should be considered. This is especially important where indicators that are used to measure a target variable by way of a ratio derived from historical relationships, as these relationships can change over time as economies evolve.

8. Volume and price measures

20.39 For consistency reasons, ANA and QNA volume data should be derived using the same formula index. Conceptually, a superlative index, such as the Fisher index, is the preferred formula for aggregating elementary price and volume indices in the QNA. An acceptable, and likely more practical, alternative is to use a Laspeyres formula for volumes with the implicit Paasche formula for prices. If Fisher indices are used, quarterly indices should be calculated using quarterly weights and chain-linked using the one quarter overlap technique. The quarterly chain Fisher series should be benchmarked to the corresponding annual chain Fisher series.

20.40 When the Laspeyres volume index is chosen, quarterly volume measures should be derived using annual

weights from the previous year. Quarterly volume measures based on the Laspeyres formula can be chain-linked using either the one-quarter overlap, typically using the fourth quarter of the previous year as the overlap quarter, or the annual overlap technique. The one-quarter overlap technique is the best choice to preserve the time-series properties of the volume series, but should always be used in conjunction with benchmarking to remove inconsistencies with the annual chain-linked data. Instead, the annual overlap technique can be used to derive quarterly volume measures that are automatically consistent with the corresponding annual ones. When the annual overlap technique is preferred, tests should be run to verify that there are no artificial steps between years in the chain-linked series.

20.41 Because chain volume data in monetary terms are typically not additive, the discrepancy between chain-linked components and chain-linked aggregates should not be removed.

20.42 The expenditure split is generally the most practical to measure quarterly GDP in volume terms because there is a relatively clear concept of price and volume for each demand category. In contrast, the price and volume dimensions of value added are more complex because value added cannot be directly observed and quarterly data on outputs and, more probably, intermediate consumption may not be available. The income approach is not suited for price and volume measures, although some analysts may be interested in deriving estimates of real income. (See chapter 18 on Measuring process, volumes and productivity for a description of the measurement of real incomes as well as a more comprehensive discussion of volume and price measures.

9. Seasonal effects

20.43 QNA series will display seasonal variations when they measure economic flows that are influenced by weather conditions, administrative procedures, trading day variations or other recurrent within-a-year patterns. These factors are often predictable. ANA variables, in contrast, do not contain seasonal patterns because the seasonal movements disappear when the quarterly data are aggregated into annual data.

20.44 Because users are often interested in removing predictable variation in order to highlight other changes in the series, it is common practice for QNA compilers to produce seasonally adjusted data based on well-established seasonal adjustment procedures that are described in the IMF's *Quarterly National Accounts Manual* (2017) and Eurostat's *ESS Guidelines on Seasonal Adjustment* (2015) and *Handbook on Seasonal Adjustment* (2018). Seasonally adjusted data retain the long term trend, the business-cycle movements, and the irregular effects in the series, but exclude seasonal and calendar effects. Simply adjusting for the number of days, or even trading days, in each period is not a substitute for seasonal adjustment as this technique does not take account of the impact of other seasonal affects.

20.45 Unadjusted data can also be useful in econometric models to exploit the information contained in the seasonal component of the series in modelling the dynamic relationship among the variables. In the context of QNA compilation, unadjusted series may be better suited for balancing purposes when the seasonal component is significant.

20.46 Seasonal adjustment procedures require that seasonal effects are relatively stable and typically a minimum of five years data is required to produce quarterly seasonally adjusted estimates. Seasonal adjustment procedures do not produce accurate results when the seasonal component has an unstable and fast-evolving pattern. Structural changes in the seasonal patterns can be handled by seasonal adjustment procedures, although experts may be needed to provide practical advice. Compilers should avoid that implausible or artificial seasonal effects are treated as true signals and passed on as such to the seasonal adjustment phase.

20.47 The seasonal pattern of QNA series should be checked and validated. In the assessment of seasonality, compilers should pay particular attention to possible breaks in the seasonal pattern. When these breaks are noted, it is necessary to investigate the causes behind these breaks and understand whether these events are temporary or permanent, which may influence their treatment in the seasonal adjustment procedure.

10. Consistency between quarterly and annual accounts

20.48 To avoid confusion about interpreting economic developments, it is essential that the QNA are consistent with the ANA. Differences in growth rates between QNA and ANA estimates cause confusion for users and uncertainty about the reliability of the actual measurements. Consistency means that the sums of the non-seasonally adjusted estimates for the four quarters of the year should be equal to the annual estimates.

In the situation where (components of) the ANA are built up from the QNA, consistency is achieved by construction. The ANA may, however, be based on different sources than the quarterly estimates, and therefore, differences are expected. To overcome this issue, the non-seasonally adjusted QNA data should be aligned with the annual data using benchmarking techniques. One advantage of benchmarking is that incorporating the usually more accurate annual information into the quarterly estimates increases the accuracy of the quarterly time series. Benchmarking also ensures an optimal use of the quarterly and annual source data in a time-series context. Benchmarking is discussed further in section D.

11. Compilation of early estimates

20.49 Compilers of QNA may produce early estimates of quarterly GDP in response to a strong demand of users for a rapid monitoring of macroeconomic developments, although the level of detail may be reduced due to a greater recourse to estimation methods. These early estimates are sometimes known as "flash" estimates. Early estimates typically use a similar compilation approach to that used for later estimates of the QNA, but are generally based on a partial set of source data. In some cases, non-official data sources such as business confidence or consumer confidence might be used; however such data sources need to be used with caution as they are not direct measures of economic activity. A greater use of statistical methods and assumptions is required to estimate missing observations at the time of the early estimate. In deciding the timing of early estimates, compilers should balance the trade-off between timeliness and reliability. As discussed in Section D, revisions studies should be conducted to analyse the revision process of early estimates and assess their reliability, including any early bias in the estimates. Eurostat's *Handbook on Rapid Estimates* (2017) provides further information on the compilation of rapid estimates.

20.50 Related to the compilation of "flash" estimates is the emerging field of nowcasting. The advances in technology in the first part of the twenty-first century have given rise to the field of big data and the development of various data science techniques to utilize such datasets. Nowcasting involves using mathematical algorithms to estimate current trends within a short timeframe. Nowcasting high level aggregates such as GDP is fraught with challenges, but can work well when the proxy indicators are related to the target variable which might be the case for, for example, household consumption. If nowcasting techniques are used, it is important to develop predictability analysis of the results to determine their appropriateness in compiling official statistics. However, if nowcasting techniques are not actually used in compilation, they can provide a useful tool for assessing the validity of estimates compiled using more traditional approaches.

12. Quarterly national accounts and short term indicators

20.51 The QNA are less timely than short term indicators, but they provide a more comprehensive picture of current economic developments organized in an integrated framework for analysing the data. Short term indicators such as price indices, labour market indicators, industrial production indices, and turnover data for retail trade are often available monthly, shortly after the reference period. These short term indicators provide valuable information on specific aspects of current economic developments, and may also be useful source data for compiling QNA. However, these indicators are often not based on national accounts concepts and do not provide a coherent, comprehensive, and consistent picture of the different aspects of the current economic situation. This hampers tracing the causes of current problems and identifying potential future developments. For instance, for a country facing decreasing domestic output growth, it would be helpful to identify causes such as decreasing domestic demand or falling exports and to further trace deeper causes such as income, saving, and investment patterns affecting demand categories, information on which would be available from a comprehensive set of quarterly national accounts.

20.52 In recent times, new non-official sources providing daily or weekly data covering specific aspects of the economy have become available. Examples include estimates of credit and/or debit card spending, road traffic data and monthly VAT collections. These so-called real time indicators are not on a national accounts basis, but can provide a very timely snapshot of particular aspects of economic activity and can be useful in compiling flash estimates.

13. Quarterly national accounts as time series

20.53 The QNA data should be presented in a time-series format. A time series is a collection of observations ordered in time. A time-series format of QNA data is essential for a number of uses, including business and trend cycle analysis, identifying turning points, studying dynamic relationships between economic variables (in particular, leads and lags) and forecasting. The QNA should be compiled and disseminated in quarterly discrete form – i.e., as estimates for each quarter – and not in cumulative form. Cumulative data do not constitute time series. Observations based on cumulated series cannot be compared, because they measure periods of time with different length.

20.54 For time series recorded in a consistent manner over time, series of period-to-period changes (e.g., GDP quarter on previous quarter growth) or changes from the same period of the previous year (e.g., GDP growth between the third quarter of the current year and the third quarter of the previous year) are generally used to assess short term movements or annual trends from quarterly data. As the quarter to quarter growth rates may be influenced by changing seasonal and calendar effects, seasonally adjusted estimates should be used for assessing movements. On the other hand, growth rates calculated using changes from the same period of the previous years are unlikely to be noticeably impacted by seasonal factors and in this case seasonally adjusted data may not be needed to calculate these growth rates.

20.55 To further highlight the underlying trend-cycle, most standard seasonal adjustment packages also calculate a smoothed trend cycle series, representing an estimate of the combined long term trend and the business-cycle movements in the series. Further information on time series aspects of national accounts can be found in Section D.

C. Regional accounts

1. Introduction

20.56 Regional accounts, also referred to as sub-national accounts, play an important role in the formulation, implementation and evaluation of regional policies. In particular, regional indicators resulting from the regional accounts are used for assessing regional disparities. Regional accounts generally make use of the concepts of the integrated framework of national accounts, though there are issues at a regional level for which additional guidance is needed. Furthermore, the compilation of regional accounts creates additional practical challenges, particularly in regard to the availability of source data. For these reasons they are usually more limited in scope and detail than the national accounts.

20.57 A particular feature of regional accounts is that each region is treated as a different economic territory. In this context, transactions with other regions are recorded as if they are external transactions. External transactions of the region must distinguish between transactions with other regions of the country and transactions with the rest of the world.

20.58 Detailed information on compiling regional accounts can be found in Eurostat's *Manual on Regional Accounts Methods* (2013). This section provides an overview of the main issues and preferred methods associated with regional accounting.

2. The regional economic territory

20.59 The economic territory of a country is described in paragraphs 5.14 and 5.15. A regional economy of a country is part of the total economy of that country. The total economy is defined in terms of institutional units and sectors. It consists of all the institutional units which have a centre of predominant economic interest within the economic territory of a country. The economic territory does not coincide exactly with the geographic territory as there may be resident institutional units that undertake production outside the geographic territory. The economic territory of a country can be divided into a so-called "regional territory" and the extra-regional territory. The former consists of that part of the economic territory of a country that can be directly assigned to a region within the geographic territory of a country, including any free zones and bonded warehouses.

20.60 The extra-regional territory is made up of the components of the economic territory of a country which cannot be assigned to a region and consists of:

a. The national air-space, territorial waters and the continental shelf lying in international waters over which the country enjoys exclusive rights.

b. Territorial exclaves (i.e. geographic territories situated in the rest of the world and used, under international treaties or agreements between states, by general government agencies of the country, e.g. embassies, consulates, military bases, scientific bases etc).

c. Deposits of oil, natural gas etc. in international waters, outside the continental shelf of the country, operated by resident units.

20.61 Because economic activity undertaken in the extra-regional territory cannot generally be allocated to a specific region, the extra-regional territory usually appears as an additional region in the regional accounts. An alternative would be to assign the extra-territorial areas to a particular region or regions on the basis of either geographic or economic attachment.

20.62 The regional territory is divided into regions in a way that best supports economic analysis, taking into account the availability of data to support the compilation of regional accounts. For countries that have states or provinces, these are typically used as the basis for regional accounts. Other administrative entities, such as departments or regional councils, could also be used. However, the regions do not need to be administrative entities. For example, in the European Union (EU), regional accounts are prepared on the basis of the *Nomenclature of Territorial Units for Statistics (NUTS)*, which divides the territory of the EU for the purpose of the collection, development and harmonisation of EU regional statistics, socio-economic analysis of the regions and framing of EU regional policies.

20.63 In principle, regional accounts could be compiled at any level of disaggregation of an economic territory. In practice, the more detailed the regions, the more difficult it is to compile high quality regional accounts, particularly because source data will often not readily support detailed disaggregation. There may also be issues with data confidentiality.

20.64 As mentioned above, a full set of accounts at the regional level implies treating each region as a different economic territory. Economic transactions of both enterprises and households may cross regional boundaries. For instance, transport services and energy supply can consist of moving goods between two or more regions. Employees can earn their wages or salaries in a region different from their region of residence and households can spend part of their income outside the region of residence. In this context, transactions with other regions are recorded as if they are external transactions. External transactions of the region must distinguish between transactions with other regions of the country and transactions with the rest of the world.

20.65 A particular issue that exists in compiling regional statistics is establishing the appropriate statistical unit. Conceptually, the establishment is the preferred unit, as it should have a local presence that can be allocated to a particular region. However, establishments do not typically have the full range of information required for compiling the full set of institutional sector accounts. Even when it comes to compiling statistics on the production of goods and services, including the inputs needed for this production, it may be problematic to estimate, for example, gross operating surplus which is typically available at the enterprise level only, and not at the establishment level. This can create challenges for compilers, which are summarised where relevant in this section. For a comprehensive discussion on statistical units, see chapter 5 on Institutional units and sectors, economic territory and residence and chapter 6 on Enterprises, establishments and industries.

20.66 The general principle for regional accounts is that economic activity should be allocated to the region where the unit undertaking the activity is resident. For households, this typically presents less difficulties, as households can generally be allocated unambiguously to a particular region. As with accounts prepared at the national level, the determination of the residence for certain types of persons, such as students and patients, requires particular consideration, and in this regard the guidance for determining residency as explained in chapter 5 should be applied at the regional level for the purpose of regional accounts.

20.67 For other institutional units, the allocation of economic activity may be less straightforward. Three cases can be distinguished:

a. There are units where their centre of predominant economic interest is in one region and where their activities take place in this region. This includes corporations whose establishments are all located in the region, local and state governments, and many NPISHs.

b. There are multiregional units where their centre of predominant economic interest is in more than one region, but does not necessarily relate to the country as a whole. Many corporations and several NPISHs are in this situation.

c. There are units that are solely national units, which means that their centre of predominant

economic interest is not located geographically even in the sense of multiregional locations (although they may undertake activities at particular locations). This is usually the case of central government and may be the case for a small number of corporations (probably public), generally in a monopolistic or quasi-monopolistic situation, such as the national railway corporation or the national electricity corporation.

20.68 Assigning transactions of the units with economic activity in only a single region to a specific region does not raise any conceptual problem. Assigning the transactions of multiregional units between various regions raises more difficulties. When considering deliveries between units of the same enterprise in different regions, it is necessary to apply the recommendation in paragraphs 6.21 to 6.28 and paragraphs 6.41 to 6.46 about intra-enterprise deliveries. Such deliveries are recorded only when the receiving unit assumes responsibility for making the decisions about the level of supply and prices at which their output is delivered to the market. When this is not the case, the receiving unit is regarded as providing only a processing service to the sending unit.

20.69 Further, some of the transactions of multiregional units simply cannot be allocated between the different regions in which they operate. This is the case for most property income and financial transactions. Likewise, interest on the public debt payable by central government cannot be geographically located. This limits the usefulness of balancing items such as saving and net lending at the regional level (other than for households).

20.70 The residence principle implies, for example, that gross value added from transporting goods across several regions will not be partitioned between the regions, but allocated to the region where the production unit is resident. An example for households is that household expenditures in another region will be allocated to the region of residence of the household. Another consequence is that the value added of enterprises with establishments in more than one region will be allocated to the regions where the establishments are located and will not be allocated entirely to the head office or administrative address of the enterprise.

3. Commuting

20.71 Persons can cross national boundaries as non-resident border workers, but it is more common for persons to cross borders between regions as commuters, particularly for smaller regions and regions around metropolitan centres. Commuters can be employees or self-employed. Self-employed persons are recorded as businesses operating from the region where the self-employed person resides. According to the residence principle, commuting employees contribute to gross value added in the country and region in which the establishment where they work is resident. Thus, the regional estimates for labour costs reflect the remuneration of employees at the place of work and not at the place of residence of the employees. As a result, commuting affects the interpretation of gross value added and GDP per head of the population. Net commuter inflows into regions increase production beyond that possible by the resident active population. Regional GDP per capita will be relatively high in regions with net commuter inflows and relatively low in regions with net commuter outflows. It may be useful to compile estimates of regional GDP per person employed.

4. Measuring regional GDP

20.72 Typically, regional gross value added at basic prices is compiled on an industry basis using either the production or income approach. (See chapter 19 on Summarizing, integrating and balancing the accounts for a discussion of these approaches.) If possible, the use of both approaches, compiled independently, is encouraged because it enables the two sets of estimates to be compared against each other to assist in quality assuring the results. Regional GDP is derived from regional gross value added by adding regionalised taxes less subsidies on products.

20.73 Conceptually, regional GDP could also be compiled using the expenditure approach. However, this approach requires information on imports and exports, which at the regional level involves transactions in goods and services between regions. Collecting this information is typically difficult in practice. However, producing regional estimates of other components of the expenditure approach, such as final consumption and gross fixed capital formation expenditures, can be very useful for analytical and policy purposes.

5. Regional accounts by institutional sector

20.74 For a range of reasons, including the difficulties of allocating property income and financial flows of multiregional and national units across regions, in most cases regional accounts are limited to recording production activities and more complete accounts for institutional sectors composed of regional units, such as households, and state and local governments.

20.75 There are no conceptual constraints to compiling a complete set of regional accounts for households and state and local governments, namely: the production account with gross value added as balancing item; the generation of earned income account with gross/net operating surplus and mixed income as balancing items; the allocation of earned income account with the balance of earned income as a balancing item; the income transfers other than social transfers in kind account with gross/net disposable income as balancing item; the use of income account with saving as balancing item; and the capital account with net lending or net borrowing as balancing item.

20.76 Regional earned income and transfer income accounts for households, in particular, can be important in understanding the material well-being of regions and can play an important role in regional policy development. Therefore, countries that compile regional accounts are strongly encouraged to compile the relevant household income accounts. This would include highly relevant regional estimates of household final consumption in the use of income account.

20.77 For countries that aspire to compile regional accounts for other sectors, a reasonable solution would be to introduce a kind of national "quasi-region", not allocated as such between the regions and being treated as an extra region. This national "quasi-region" may include the head offices of enterprises that have establishments located in, and assigned to, the regions, as well as national units.

6. Methods of regionalization

20.78 There are essentially two general methods for estimating regional aggregates: the "bottom-up" method and the "top-down" method.

20.79 The bottom-up or ascending method of estimating a regional aggregate involves collecting data at the (local) establishment level or the residence of households and aggregating these values to get a regional total. The method is called "bottom-up" because the elements for compiling the aggregate are directly collected at the regional level. This method can be used for enterprises that operate in only one region, or for establishments and households if full information is available.

20.80 A pseudo bottom-up method can be followed where data for establishments or the residence of households are not available. Data for establishments can be estimated from enterprise data allocated using regional indicators. The estimates can then be aggregated to obtain regional totals just as in a purely bottom-up method. This method can be used especially for multiregional enterprises.

20.81 A technique that sits in-between a pure bottom-up approach and a pseudo bottom-up approach can be used when partial information is available for establishments. For example, information on remuneration of employees may be available at the establishment level, but not information on gross operating surplus. In this case, the information on remuneration of employees would be used directly in a bottom-up approach, and estimates of gross operating surplus at the enterprise level could be allocated to establishments in proportion to remuneration of employers.

20.82 In the top-down method a national figure from the national accounts is distributed using regional indicators which are as close as possible to the variable to be estimated. For example, remuneration of employees payable might be allocated to regions using the regional distribution of the total number of full time equivalents of employees, multiplied by the average annual earnings per employee from a different statistical source. This results in the regional distribution of total earnings of employees, which can be used as a regional indicator for the allocation of remuneration of employees to regions. However, indicators that allocate activity to where it takes place, rather than the region where production occurs, such as allocating the gross value added of rail passenger transport to regions according to the number of passengers transported in a region, should be avoided if possible.

20.83 In terms of quality and precision, the bottom-up approach is preferred, especially when the source data are available and of an acceptable quality. However, in practice, regional accounts are likely to be compiled using a mixture of bottom-up and top-down approaches depending on the availability of source data.

7. Volume and price estimates

20.84 In measuring price and volume changes, the principles applied for the national economy also apply to regions. However, there may be problems with regional data which make applying these principles to regions difficult. These include:

a. information on regional price changes is often not available.

b. if regional value added in current prices is directly estimated and not by deducting intermediate consumption from output, then double deflation of regional value added is not possible.

c. in the absence of regional supply and use tables, price and volume changes cannot be measured and assessed in such a framework.

20.85 A commonly used approach is therefore to deflate regional value added by industry on the basis of national price changes by industry. This is carried out at the most detailed level at which gross value added at current prices is available. Differences between national and regional price changes due to differences in economic structure by industry are taken into account. However, this solution is still vulnerable to major differences between national and regional price changes. Examples of such differences are:

a. Differences in cost structure, technological intensity and composition of outputs within one industry between producers in different regions. There can be large variations in price changes amongst regions for a single industry.

b. Regional differences in the price changes of major inputs, for example, changes in the price of labour, land and renting office space. However, the existence, for example, of national wage agreements with no regional differentiation implies that regional differences in changes in wage rates are likely small.

8. Regional input-output statistics

20.86 Regional input-output statistics comprise regional supply and use tables and the input-output tables based on them. The data in the tables improve the precision and add depth to regional accounts data. They describe the structure of production in the regions, relationships between economic activities and the dependence of regions on the product flows in other regions and abroad.

20.87 Regional input-output statistics form an integral part of regional accounts. Product flows described according to a consistent and logical framework add to the content of regional accounts data and enhance their quality. Supply and use tables describe the supply of products generated by production and imports in a region and the use of these products in the production of other goods (intermediate consumption), final consumption, capital formation and exports. The symmetrical input-output tables which are derived from supply and use tables describe interdependencies between economic activities. Analytical tables derived from them can be used to study the importance of the production and final use of economic activities to regional economy and labour input.

20.88 Notwithstanding the benefits of compiling regional input-output statistics, they are data intensive and ideally require data for all components, including regional trade in goods and services. Generally, the full range of data is not available, so estimates of missing components are often derived using models. Due to the extent of modelling that may be required, regional input-output statistics are often produced by organizations like universities or economic research institutes. Nonetheless, given the usefulness of regional input-output statistics, national statistical offices that produce regional accounts should investigate the possibility of producing regional input-output statistics. If, however, it is determined that they cannot be produced according to the quality necessary for official statistics, the national statistical office should support other institutions that may be prepared to produce these statistics, or alternatively compile the statistics as experimental statistics with adequate metadata on the quality of results. Further information on supply and use tables can be found in chapter 15 and on input-output tables in chapter 36.

D. Time series aspects of national accounting

1. Introduction

20.89 Every national economy fluctuates between periods of expansion and contraction. These fluctuations, which are known as the "business cycle", are caused by changes in levels of labour input, productivity, and the total demand for and supply of goods and services. In the short run, these changes lead to periods of expansion and contraction, often referred to as a "recession". But in the long run, in an economy with underlying growth in potential output, the peaks will be higher each time.

20.90 Conceptually, the typical business cycle has four phases, which progress as follows:

a. Expansion: when the volume of GDP is increasing, and unemployment is typically decreasing;

b. Peak: the turning point in the business cycle at which output stops increasing;

c. Recession: when the volume of GDP is decreasing, and unemployment is increasing;

d. Trough: the turning point at which a recession ends and the volume of GDP starts increasing.

20.91 A major strength of the integrated framework of national accounts is to offer long and consistent time series, which are a necessary ingredient for monitoring the business cycle and for economic modelling and forecasting. National accounts data should be comparable over time to provide accurate measurements of short and long term economic changes. This presents two particular challenges for compilers.

20.92 First, high quality data sources are often available less frequently than the frequency with which the accounts are compiled. To overcome this, national accountants use data sources that are timelier, but are of lower quality. To ensure that the best use is made of source data, the higher quality data sources are introduced when they become available, and the lesser quality but more frequent data sources are integrated through a process known as extrapolation and interpolation. Underpinning this approach are benchmarking techniques, which are discussed below in sub-section 2.

20.93 The second challenge occurs when new concepts, methodologies etc. are introduced into the integrated framework of national accounts. In theory, the impact of these changes should be carried as far back as possible to avoid breaks in the series. In practice, this task is complex because the data to compile back periods under new principles may not be available or new classifications may simply not be applicable to previous periods. Consequently, it may not be possible to re-calculate back series following the same methodology used for current periods and back-casting is required. Back-casting is discussed in sub-section 3.

20.94 Both benchmarking and back-casting lead to revisions in national accounts series, which need to be carefully managed and explained to users. The issue of revisions is touched upon is sub-section 4.

2. Benchmarking

20.95 Benchmarking deals with the problem of combining a series of high-frequency data (e.g., quarterly data) with a series of low-frequency data (e.g., annual data) for the same variable into a consistent time series. The two series may show different levels and movements, and need to be made temporally consistent. Because low-frequency data are usually more comprehensive and accurate than high-frequency ones, the high-frequency series is benchmarked to the low-frequency one. Benchmarking is also relevant to link the data between two comprehensive revision periods, where the national accounts are comprehensively revised say every five years.

20.96 Benchmarking methods should be used to derive more frequent series that (i) are temporally consistent with the less-frequent benchmarks, (ii) preserve as much as possible the movements in the indicators, and (iii) provide accurate extrapolations for periods going forward.

20.97 The pro rata method, which is a simple method of benchmarking, should be avoided. The pro rata method distributes the temporal discrepancies – the differences between the estimates derived from the more-frequent series and those derived from the less-frequent data – in proportion to the value of the indicator. The pro rata approach produces unacceptable discontinuities from one benchmark to the next (the so-called "step problem") and therefore does not preserve the movements in the indicator from the last period before the benchmark to the period following the benchmark. Techniques that introduce such breaks in the time series seriously hamper the usefulness of the time series by distorting economic

developments and possible turning points. They also hinder forecasting and constitute a serious impediment for seasonal adjustment and trend analysis.

20.98 To avoid the "step problem", proportional benchmarking methods with movement preservation of indicators should be used to derive more frequent series. The preferred solution is the proportional Denton method. The proportional Denton method preserves the movements in the more frequent series as much as possible subject to the restrictions provided by the benchmarking data. As an alternative to the Denton method, the proportional Cholette–Dagum method and its variants can also be used. These benchmarking techniques are explained in detail in chapter 6 of the IMF's *Quarterly National Accounts Manual* (2017). As explained in the Manual, even though the chapter is focused on the quarterly-to-annual benchmarking, the principles and methods outlined apply to benchmarking of any other high-frequency to low-frequency data. Eurostat's *ESS guidelines on temporal disaggregation, benchmarking and reconciliation* (2018) also provide further information on this topic.

20.99 Benchmarking should be an integral part of the national accounts compilation process and should be conducted at the most detailed compilation level. In practice, this may imply benchmarking different series in stages, where data for some series – which have already been benchmarked – are used to estimate other series, followed by a second or third round of benchmarking. The actual arrangements will vary depending on the particularities of each case.

20.100 To avoid introducing distortions in the series, incorporation of new benchmarking data will generally require revision of previously published higher frequency series for several years. As noted above, benchmarking methods with movement preservation (like the Denton method and the Cholette–Dagum method) minimize the impact of revisions on the historical movements of the higher frequency series.

3. Back-casting

20.101 The term "back-casting" (or "back-calculation") relates to all the steps undertaken to reconstruct backward data using current measurement standards. The objective is to provide the user with long and consistent time series that maintains the economic history of a country. In the national accounts, a back-casting exercise is typically required at the time of a major revision due to the introduction of methodological changes, new accounting standards, new concepts, new classifications, new benchmark years or base years, or new data sources. These revisions may lead to breaks in the time series when they cannot be applied for the entire length of the national accounts. These breaks can hamper the comparability between observations in the pre- and post-revision periods.

20.102 There are two general back-casting approaches: (i) the micro approach and (ii) the macro approach. The micro approach aims at recompiling the historical estimates starting from the source data at the elementary level of detail. The micro approach guarantees the most accurate results as the micro data are processed and aggregated using the new concepts, definitions, classifications etc. However, the necessary source data may not exist, or it may not be feasible to rerun the entire compilation process with available resources and time constraints.

20.103 In contrast to the micro approach, the macro approach aims at back-casting at more aggregate levels. The macro approach comprises statistical techniques and estimation methods that make a greater use of assumptions about how new concepts principles, etc. apply to the past. These methods can make use of previously published series, indicator series or intermediate series calculated in the various steps of the national accounts compilation process. As results may differ according to the aggregation level of the data, compilers should choose the preferred level of detail considering the complexity of the back-casting exercise and the quality of the recalculations. Ideally, back-casting methods should be applied at the most detailed level of the national accounts compilation.

20.104 In practice, countries should adopt a mix of back-casting methods that best suit their specific circumstances and needs of the particular back-casting exercise.

20.105 Splicing (or linking) is the simplest and most common macro back-casting method. Splicing can be used to link the new series with the old published national accounts series. The only requirement is to have an overlap between the old and new series for at least one period. The old and new series should measure as much as possible the same concept. Back data are obtained by multiplying the values of the old series by the ratio between new and old levels in the overlap period. In the case of quarterly series, the overlap period can be either the first quarter or the first year in the new series. In the former case, the new series will show the same quarter-to-quarter rates of change of the old series in the backward period. With annual splicing, the adjustment ratio is taken from the whole year; in this case, the spliced series will

preserve the old annual rate for the overlap year.

20.106 The assumption underlying basic splicing is that the impact of the changes in the overlap period remains the same in the back-casting period. If this assumption is unlikely to hold true, alternative methods, as discussed below, should be used.

20.107 Quarterly splicing is the preferred approach as it provides the smoothest transition between the old and new series. However, compilers should be aware that quarterly splicing may introduce a break in the seasonal pattern if the new series presents seasonal effects that are different from those in the old series. Annual splicing could be preferable when there is a need to preserve the annual movements in the overlap period.

20.108 Another splicing possibility is to link gradually the old series to the new series. This approach aims at interpolating the new level of the series with a particular point in time of the back-casting period (one year or one quarter). The rates of change in the in-between periods will change accordingly. This method can be appropriate when a particular level in the old series should be preserved. This situation could arise when it is required to maintain levels of national accounts variables that had been estimated from previous benchmark revisions.

20.109 More sophisticated back-casting methods may be required when the assumptions underlying basic splicing techniques do not hold. For example, a more elaborated back-casting solution should be devised when there is an update of classifications. In such cases, assuming that the new series present the same movements of the old series may lead to incorrect results. New classifications may bring out items that did not exist before, or may change the way previous items were aggregated in top-level groups. Furthermore, an additional constraint for pure classification changes is that the total should not change. Bridge tables between old and new classifications should be created to help reconstruct old indicators according to a new classification. One way to reconstruct short term dynamics of new items in past periods is to estimate regression models between national accounts series and proxy indicators for those items. This approach should be used with caution as these methods rely on behavioural relationships between national accounts variables and related information that may not hold for the entire time period.

20.110 Another case where the assumptions underlying basic splicing may not hold is when conceptual changes are introduced. Basic splicing may lead to estimates being created for certain items for historical periods when the items simply did not exist, for example, those relating to new technologies. In these cases, it may be necessary to set a particular historical period's value at zero, and to use interpolation techniques to estimate values for subsequent periods until actual data are available.

20.111 A back-casting exercise should be conducted in a coordinated manner for both annual and quarterly accounts. The benchmarking methods described above can be used to realign quarterly data to annual benchmarks that are back-calculated independently.

20.112 One problem of consistency that may arise from the application of back-casting techniques at all levels of compilation is the lack of additivity between components and aggregates. Back-casting at detailed level has the advantage of preserving the original information for each series. However, it will show discrepancies between components and aggregates. This problem can be solved if back-casting is applied at the component level only, while the aggregate is derived as the sum of the reconstructed components. A disadvantage of this approach is that the aggregate rates of change will differ from the original ones, which may lead to confusion and criticisms from the user. The choice will also depend on the types of revision introduced. If there is a change in classifications, components that are not affected by the classification change, such as a higher level aggregate, should be preserved. However, when new methods are introduced, the aggregate levels should not be preserved.

20.113 Generally speaking, compilers should implement a back-casting solution that preserves as much as possible the consistency property of national accounts and, at the same time, minimizes the changes in the economic history of a country. The new back-cast results must present a plausible picture of the economy over the entire time series. There should be a thorough evaluation of the back-cast results, including verification of the individual series and balancing items, and analysis of the revisions to both levels and growth rates of key variables.

20.114 Back-casting is explained in more detail in chapter 5 of the IMF's *Quarterly National Accounts Manual* (2017)

4. Revisions

20.115 In order to maintain high-quality, consistent time series, revisions are an essential part of good national accounts compilation practice. They ensure that users are provided with data that are as timely and accurate as possible. Revisions are necessary to incorporate improvements in source data and methods, and the introduction of new international standards and classifications.

20.116 Resource constraints, in combination with user needs, cause tension between the timeliness of published data on the one hand, and reliability, accuracy, and comprehensiveness on the other. To reduce this tension, as discussed above, initial estimates are typically compiled on a timely basis, with later, revised estimates produced when more and better source data become available. Good management of the process of revisions requires the existence of a well-established and transparent revision policy.

20.117 It is important to emphasize that revisions are conducted for the benefit of users: namely, to provide users with data that are as timely and accurate as possible. Revisions allow new and more accurate information to be incorporated, thus improving the accuracy of the estimates, without introducing breaks in the time series. Although repeated revisions may be perceived as reflecting negatively on the trustworthiness of official statistics, delaying the incorporation of new data in the published estimates may increase the magnitude of later revisions (in particular, if these go in the same direction). Furthermore, not passing on known revisions reduces the actual trustworthiness of data even more, because the data do not reflect the best available information, and the public may know this or find this out (for instance, the public may wonder why a revision in the monthly production index is not reflected in the QNA).

20.118 Every so often (such as every five years), compilers of national accounts statistics, particularly compilers of QNA, should undertake a systematic analysis of the revisions that have been made to key national accounts series, such as GDP. Structural differences between initial and subsequent estimates, such as when initial estimates persistently overstate or understate later estimates, could indicate bias in the initial data sources or methods, which could be adjusted to improve the quality of the initial estimates. Significant volatility in revisions, but without a persistent pattern, could indicate that the initial data sources or methods are not of sufficient quality, and improvements to them or the use of better-quality alternatives should be investigated.

20.119 More information on developing a revisions policy and communicating revisions to users can be found in chapter 21 on Communicating and disseminating macroeconomic statistics.

E. High inflation

20.120 Establishing meaningful national accounts in a country where high inflation prevails is indeed a challenge for national accounting. This challenge does not arise because those conditions create totally new national accounting problems. In fact, the same problems also exist conceptually in the very common situation of creeping inflation, with low rates of changes in the general level of prices. However, high rates of inflation exacerbate the problems. A method of measurement which gives acceptable approximate measures in more or less normal conditions may no longer be acceptable with significant inflation.

20.121 Basically, under high inflation the three classic roles of the currency are disrupted. The disruption in the currency's role as instrument of payment is minor; most transactions continue to be cleared in the national currency even though – sometimes legally, more often illegally – foreign currencies may be used for some domestic payments. The main difficulties are encountered in the currency's role of reserve of value. This aspect is well-known. When the annual rate of inflation is 50 per cent, for example, it is not advisable to keep any saving in the form of monetary assets, unless a mechanism of compensation against inflation is established explicitly through indexation or implicitly through high market rates of interest. Perhaps less obvious is the crisis of the currency's role as unit of account even for short periods of time. This aspect is, of course, connected with the previous one. Even within a period of one year, the value (i.e., the purchasing power) of the currency diminishes sharply when inflation is high, with the result that the sum of the values of transactions which take place at different times of the year is not at all easy to interpret. If all transactions were evenly distributed and inflation regular during the year, it could be said that the unit of account is the mid-year value of the currency. However, this condition is not fulfilled in practice. This means that under high inflation flows as conventionally measured give a distorted picture of the economic structure.

20.122 On certain aspects the integrated framework of the SNA provides rules which, rigorously applied, are capable of providing correct measures. For example, rules related to the time of recording transactions

are essential: transactions have to be recorded at the same point in time in the various accounts in question for both transactors. Differences in the time of recording by transactors have much more serious distorting effects when inflation is high.

20.123 A particular and very important aspect concerns transactions and balancing items that are measured by the difference between flows. This is the case, for example, for distribution margins measured as the difference between value of the sales and the value of the purchases of the goods which are sold (the method followed in practice being very often: sales less purchases plus changes in inventories). The correct measurement of distribution margins at any point in time supposes that the purchase value of the goods sold is the price prevailing at the time the goods are sold, not at the time the purchase was actually made. In other words it means that changes in inventories have to reflect adequately the difference in value between entries to and withdrawals from inventories valued at prices at the time of entry and withdrawal, respectively (see chapter 7 on Production account).

20.124 The measurement of value added is a very important case in point when the process of production extends over a long period of time (under high inflation "long" is usually much shorter than when inflation is low) and there is a significant lag between intermediate consumption and the recording of output. (In agriculture, for example, harvesting may even take place in a different calendar year.) In principle, the SNA provides the solution for correct measurement. It relies upon careful recording of work-in-progress. In effect, if intermediate consumption takes place mainly, for example, in the first part of the year and output (harvests or, in other cases, deliveries taken as a measure of output) is recorded mostly in the second part of the year, under high inflation value added will be overestimated. Since remuneration of employees is recorded when due or paid, the figure for operating surplus is heavily distorted. Of course, for agriculture if harvests occur mainly in the first half of the year and intermediate consumption in the second, the distortion is inverted.

20.125 The solution in such cases, in principle, is to record output progressively as work-in-progress. Then at the end of the process of production, the previously recorded work-in-progress is withdrawn from inventories after due revaluation, while from the other side the output of finished products is entered in inventories at the prices prevailing at this time. This solution shows that, basically, the right rule of recording output and inventories is the perpetual inventory method, careful attention being paid to the recording of work-in-progress. This is true for business accounts and national accounts as well. Departures from this ideal treatment cause more significant biases when inflation is high. In practice, the right solution may be difficult to apply, especially if business accounts do not provide adequate data. However, it should be approximated as far as possible, in order to minimize distortions.

20.126 Applying the SNA's solutions referred to in the previous paragraphs is a means of trying to get correct measures as far as it is feasible. However, they do not solve the difficulty related to the loss of meaning of the unit of account under high inflation. Rigorously, a unit of the currency at the beginning of the year is not additive with a unit of the currency in the last months of the same year. Strictly speaking, this holds every time the purchasing power of the currency changes, even when the rate of inflation is low. However, under normal conditions (low inflation) it is assumed that over a short period of time (one year) the loss of significance of the currency as a unit of account is limited. For longer periods, this assumption is not acceptable, and comparisons are made either in volume terms (for goods and services) or in real terms (constant purchasing power of the currency). A short period of hyper-inflation involves the same measurement problems as a much longer period of low inflation.

20.127 As explained above, because transactions are not evenly distributed and inflation is not regular during the year, it may not be assumed that the implicit unit of account is the mid-year currency. Consequently, the economic relations are distorted. Phenomena occurring mainly in the first part of the year have their shares understated; conversely, those occurring mainly in the last part of the year have their shares overstated.

20.128 In order to avoid such distortions, it would be possible to use the currency at a certain point or during a short period of time (one month, for example) as the unit of account. All transactions would then be revalued at the (constant purchasing power of the) currency at the chosen point or period by applying to current values an indicator of the change in the general price level. Applying such a procedure systematically might, of course, be burdensome, but it might be appropriate to implement it for certain flows or certain aggregates only, possibly using simplified methods of calculation.

20.129 Because of the difficulties in interpreting national accounts in current values, one could conclude that it is useless to establish these accounts in periods of high inflation. However, they remain necessary for use in conjunction with monetary and financial variables. Further, under such circumstances more emphasis should be given to accounts covering shorter time periods. As monthly accounts are often not

feasible, except for some items, quarterly accounts covering more than just GDP and its uses would be of great value for analysis. The use of the currency as a unit of account on a quarterly basis, while subject to the general criticism in principle, provides results which are easier to interpret than annual data, unless there is hyper-inflation. In addition, quarterly accounts might provide a short-cut method for determining annual accounts, using the average value of the currency in a given quarter as the unit of account.

20.130 Volume estimates, which play an important role in national accounting in general, are given even more emphasis for flows of goods and services and the production account when inflation is high. As far as possible it is probably appropriate to attempt to estimate volume increases directly rather than rely on deflation methods applied to current prices. In effect, the degree of approximation in the measurement of price changes may well be of the order of magnitude of the volume changes. The danger is increased when the base period for price increases is very out of date.

20.131 In general, frequent rebasing of national accounts in volume terms is advisable when changes in relative prices are important. In this regard, annual chain linking is encouraged. If this is not possible, the choice of the base year, which is always a delicate one, may be especially complex under high inflation due to the fact that price adjustments are irregularly timed. Studying how relative prices move in the short-, medium- and long-term in periods of high inflation, as compared with other periods, is of particular importance.

20.132 To assess the effects of inflation it is not sufficient to measure only flows in the current accounts and in the capital and financial accounts of the sequence of economic accounts. This is so because inflation may redistribute wealth and because changes in real wealth due to inflation may amplify or counterbalance changes in these flows. The revaluation account, which shows real holding gains and losses incurred by institutional sectors and the rest of the world according to the types of assets and liabilities they hold, is of special importance in this context.

20.133 Calculating these gains and losses supposes, of course, that a country has previously established balance sheets for institutional sectors. In this respect, establishing balance sheets for financial assets and liabilities is of prime importance because the dramatic changes in the purchasing power of the currency when inflation is high undermine its role as a reserve of value. The face value of monetary assets covers a vanishing real value of these assets. For interest-bearing financial assets and liabilities (non-interest bearing financial assets may hardly exist when inflation is high, except at the minimum level necessary for current payments), the decrease in their real value is generally compensated, at least in part, by explicit indexation or inclusion of an element compensating for inflation in the rate of interest. This means that nominal interest, under these circumstances, can include a component which may be viewed as an anticipated reimbursement/refund of the decline in real value of the principal of the financial liability/asset. The higher the rate of inflation, the quicker is this process of reimbursement/refund.

20.134 The element of nominal interest compensating for inflation should not be considered as a return to capital by the lender and a current cost by the borrower. The SNA sequence of economic accounts treats these components of explicit or implicit indexation as interest received and paid in the current accounts, and this treatment does not create great difficulties when inflation is low. However, the measurement of these components is essential when inflation is high if one wants to interpret correctly figures such as government disposable income or saving (or government deficit) and the corresponding figures for creditor sectors, etc. For this reason, for countries experiencing high inflation, it is recommended to show real holding gains and losses on financial assets as memorandum items to the current accounts, in particular the earned income account. Countries with high inflation would benefit greatly from following this procedure and, in addition, giving great emphasis to a careful scrutiny of holding gains and losses in the revaluation account.

20.135 Going one step further, countries experiencing significant inflation may want to adjust nominal interest in order to get more meaningful measures of the balance of earned incomes, disposable income and saving of the various institutional sectors and possibly the total economy. Two main approaches may be followed:

a. Deduct from nominal interest the amount which has been or would have been necessary in order to keep the purchasing power of the capital intact (the capital being the principal of the financial asset/liability to which the interest refers); or

b. Deduct from nominal interest the component of protection against inflation of the principal of the asset which is actually included in nominal interest.

20.136 The first approach is usually referred to as the calculation of "real interest". Real interest is the excess of

nominal interest on financial assets over the amount which has been or would have been necessary in order to fully protect the creditor against inflation. The latter amount is calculated using an index representative of the change in the general purchasing power of the currency. When nominal interest is higher than the amount necessary to keep capital intact, real interest is positive. When nominal interest is lower than the amount necessary to keep capital intact, real interest is negative.

20.137 Real interest is derived from nominal interest by taking account of real holding gains and losses on the underlying assets/liabilities. For this reason, however, real interest may not be introduced in the sequence of economic accounts since it is a basic principle of the integrated framework of the SNA that holding gains or losses should not be recorded in the current accounts of the sequence of economic accounts, but only in the revaluation account. This is true for nominal holding gains and losses (and a fortiori real holding gains and losses) on all types of assets/liabilities. Thus real interest as well as other adjustments of current incomes for real holding gains and losses may only be introduced as supplementary items, either or not in extended tables.

20.138 In the second approach, the component of protection of the principal of the asset against inflation which is actually included in nominal interest is deducted. Clearly the component of protection against inflation cannot, by definition, be greater than nominal interest itself; it can only be lower than or equal to nominal interest (leaving aside the service charge issue). In order to avoid any confusion with real interest from one side, and interest as currently defined in the sequence of economic accounts from the other side, the excess of nominal interest over the component of protection against inflation of the principal of the asset actually included in nominal interest is here referred to as "interest prime". By definition, "interest prime" may be positive or zero, but never negative.

20.139 Real interest and "interest prime" serve different purposes. "Interest prime" takes into account the actual influence of inflation on nominal interest, by deducting from the latter the actual component of protection against inflation of the principal of the asset which it includes. Real interest takes into account the impact of inflation on the purchasing power of the underlying assets, by deducting from the nominal interest the amount which has been or would have been necessary in order to keep the purchasing power of the asset intact.

20.140 Reflecting their different purposes, real interest and "interest prime" have different roles and places in the SNA sequence of economic accounts. Real interest is a very useful analytical tool; as already stated above, it may be calculated as a supplementary item, something which is recommended for countries experiencing high inflation. Although it does not go so far as real interest, "interest prime" allows for a possible adjustment of nominal interest in the SNA sequence of economic accounts itself in the context of significant inflation. In the case of other property income, such as dividends, the protection against inflation of the value of the underlying asset is sought through the change in the market prices of the underlying assets, such as shares, recorded in the revaluation account. This element is not included in dividends in current terms. Thus, in terms of economic significance, the meaning of "interest prime" resembles the meaning of dividends. Both "interest prime" and dividends may then be adjusted for real holding gains and losses, outside the sequence of economic accounts, in order to get real interest or real dividends (not to be confused with interest in real terms or dividends in real terms). In terms of economic significance, the sum of dividends and holding gains and losses on shares can be interpreted as parallel to nominal interest. This shows that "interest prime" actually provides a concept whose definition is closer to the definition and measure of other property income than nominal interest.

20.141 Real interest and "interest prime" only coincide when the component of protection against inflation actually included in nominal interest is strictly equal to the amount necessary in order to give the creditor full protection against inflation. In other cases, real holding gains or losses are still experienced by debtors and creditors. They may be combined with "interest prime", outside the sequence of economic accounts, in order to derive real interest.

20.142 For further information on accounting for high inflation, see OECD's *Inflation accounting: A manual on national accounting under conditions of high inflation* (2003)

Chapter 21: Communicating and disseminating macroeconomic statistics

This is a common chapter with chapter 20 of *BPM7*, and for the most part, the text is identical in both the *2025 SNA* and *BPM7*.

A. Introduction

21.1 The way in which macroeconomic statistics are communicated and disseminated has a significant impact on users' understanding and utilisation of the data and should be viewed as a key component of the production chain of official statistics. Users benefit from comprehensive, consistent, accurate and reliable information communicated and disseminated on a timely basis in an accessible and understandable manner.

21.2 Macroeconomic statistics can be disseminated and communicated in various ways to enhance the full extent of their analytical usefulness, comparability through time and across economies, and to ensure that policy relevance is maximised. In addition, when communicating macroeconomic statistics, the terminology and presentation of the macroeconomic aggregates and concepts should, where sensible, reflect and align with the language of business, governments and the public.

21.3 There are various differences between countries when it comes to communicating and disseminating macroeconomic statistics. By developing consistent standards, a high degree of comparability will be achieved, in turn making users better aware of the basis of the data (for example, which version of the SNA is used by the country) before undertaking their own analyses. At the same time, recognising the diverse needs and preferences of different user segments (e.g., policymakers, businesses, researchers and the general public) and tailoring communication strategies accordingly can further improve the relevance of macroeconomic statistics. When communicating with different user segments, different terms may be used for the same content to assist in understanding.

21.4 Dissemination covers the technical dimension of providing accessibility to data mainly to the more specialised and expert users. However, statistical dissemination and communication go beyond providing accessibility to numbers and include specific narratives, key messages, visualisations, etc., which improve the user understanding and reduce the risk of misrepresentation by users.

21.5 Effective statistical communication will convey a message based on facts collected from data suppliers' explanations, comments and feedback on data movements. This information will help to explain to users what happened, when and where something happened as well as contributing to understanding why and how it happened. However, such information may not always be available from data suppliers. Statistical organisations can use communication to demonstrate the relevance of their data whereby they can justify the public outlay and anticipate greater support for statistical programmes, improve relationships with data providers and gain appropriate visibility for their products.

21.6 This chapter aims to provide principles and guidelines for producers of macroeconomic statistics to consider, together with some additional recommendations to enhance the way those statistics are communicated. This is to help improve comparability, understanding and the experience for the users of these statistics.

21.7 The chapter includes section B covering the dissemination strategy and communication policy; section C covering communication with users; section D covering communication with data suppliers; section E covering statistical confidentiality; section F covering taxonomies and metadata; section G covering a framework for measuring alignment with the international macroeconomic statistical standards; section H covering prominence given to indicators other than GDP and clarification of the use of the term "net"; and section I covering the use of more understandable terminology for users.

B. Dissemination strategy and communication policy

21.8 The production, analysis and dissemination of official statistics should be undertaken in a transparent and accessible way. To aid all users, information is provided through different channels (e.g., from printed releases on paper to distribution in various forms on internet sites, including the use of social media) to meet different user needs and uses.

21.9 The dissemination policies and strategies designed by official statistics producers form part of the vision, mission, principles and values of their organisations, often available on official statistical producers' websites and should be consistent with the underlying *UN Fundamental Principles of Official Statistics*.

21.10 The principal aim of statistical communication is to reveal more of the information contained in statistical data (e.g., about movements in the data) and to make statistical information easier to interpret. Statistical communication is about providing factual explanations of the data in an easily understood and interesting fashion; and encouraging journalists and other users to consider how statistics might aid their analyses. Good dissemination policies support the provision of access to consistent and coherent statistical data to all users. Good dissemination practices ensure transparency and impartiality including the release of data to all users at the same time according to previously announced release calendars.

21.11 Dissemination of statistical data encompasses the use of a diverse array of channels and formats to reach a wide audience effectively. These channels include official statistical producers' websites, printed materials and social media platforms. Data can be presented in various formats such as tables, charts or raw datasets to cater to different audience preferences and needs. Using the latest technologies, the publishing capability should support digital dissemination. This will require setting appropriate standards and policies; support for mobile devices without undermining conventional release modes; commissioning new processes; and making more data available in an open format such as comma-separated value files.

1. Link to the *UN Generic Statistical Business Process Model*

21.12 The statistical value chain reflects dissemination and communication as key steps with both suppliers and users. The *UN Generic Statistical Business Process Model* describes the set of business processes that form the statistical value chain needed to produce official statistics providing a standard framework and harmonised terminology to help statistical organisations. The Level 1 stages form the highest level of the *UN Generic Statistical Business Process Model* and are shown in figure 21.1.

Figure 21.1: UN Generic Statistical Business Process Model – Level 1 stages

21.13 For statistical outputs produced regularly, the dissemination phase occurs in each of the Level 1 stages. The dissemination phase is made up of various processes: updating output systems; producing, managing and promoting dissemination products; and managing user support (including feedback from user satisfaction surveys). These processes are generally sequential but can also occur in parallel and can be iterative as well as include all activities associated with assembling and releasing a range of static and dynamic products via a range of channels. These activities support users to access and use the outputs released by the statistical organisation.

21.14 It is also important to recognise the collection phase. This is critical and relies on effective and relevant communication with suppliers, which will have a different focus than that needed for dissemination to users. This phase collects or gathers all necessary information using different collection modes (including extractions from statistical, administrative and other non-statistical registers and databases) before internal processes take place thereafter. The collection phase is broken down into various processes, from design and creation of the frame (e.g., questionnaire, definitions, notes, etc.) and sample selection to setting up and running the collection processes. The approaches and processes may differ for the different types of source data, for example, administrative data and business survey data. More detail on the supplier relationship is covered in section D.

2. Organisational structure and the media

21.15 The statistical systems of individual countries have a range of approaches when it comes to managing external communication functions. The placement of those functions within the organisational structure

will have an impact on their effectiveness. Such placement should ensure that the communication of statistical data and the associated technological infrastructure receive a high level of attention and investment. Increased supply of data from non-official data producers means that there is an increasing need for the statistical organisations to improve communication in terms of quality, content, timeliness and channels used to reach its different users, in particular the media and policymakers, as well as harder-to-reach groups (for example, students, researchers, etc.).

21.16 The link between the economic statistics compiler and the communications team is key. This link will ensure the technical nuances and message(s) are addressed in a way the communications team can effectively communicate and draw out the important messages for the users in an understandable way. The effectiveness of this link can be enhanced through media training for the compilers as well as basic macroeconomic statistics training for the communications staff.

21.17 It is recommended that all external communications are supported by a close working relationship with the media team, who tend to be the main distributors of statistics to the broader public. In this way, the information is available to all at the same time without privileged accesses. There may be a limited number of people with time limited pre-release access in a secure setting for specific reasons such as media outlets to prepare their headlines and briefing, or to enable officials to prepare for the briefing of government ministers at release time. In this case, the time-limit needs to be defined in such a narrow way that the risk of external interference is minimised and the existence of any such arrangements should be made public by the statistical organisation.

21.18 The communications team is usually responsible for the relationship between the statistical producer and the media by organising and coordinating press conferences, interviews with experts, requests from journalists and other requirements such as handling media crisis. Other key aspects that will need to be covered include handling social media, website management, digital design and data visualisation.

21.19 In line with the above guidelines, contact with the media, their professionals and representatives, should aim to:

- promote an open relationship;
- foster mutual professional respect;
- meet the needs of media;
- treat journalists as legitimate representatives of the public; and
- provide information as quickly and completely as possible, in a factual and responsible manner supported by evidence.

3. Principles and standards

21.20 Official statistics should be reliable, objective and relevant for decision making. An appropriate dissemination strategy can be developed in line with the *UN Fundamental Principles of Official Statistics*, whereby Principle 1 states that "…official statistics … are to be compiled and made available on an impartial basis by official statistical agencies to honour the citizens' entitlement to public information." Principle 1 sets out a clear steer for dissemination. Therefore, statistical organisations should provide users with maximum access to official statistics in accordance with confidentiality guidelines.

21.21 To help establish good dissemination practices, there is a range of information about good practices already available. For example, the European Commission has maintained the *European Statistics Code of Practice*, which discusses dissemination practices. Similarly, many countries have likewise developed statistics codes of practice suitable for their purposes, and important to note, these codes serve both users and producers.

21.22 Box 21.1 shows several publications developed by the United Nations Economic Commission for Europe (UNECE) providing guidance to statistical organisations to aid communication and dissemination of statistics. These were prepared within the framework of the UNECE Work Sessions on the Communication and Dissemination of Statistics.

Box 21.1: UNECE Guidance to statistical organisations covering communication and dissemination

The target audience of the UNECE Guidance is wide but the guidance is intended as a practical tool to help managers, statisticians and media relations officers, in particular those in the process of developing communication and dissemination strategies, and to aid training for new staff. The guides also recognise there will be different approaches as well as practical and cultural differences across countries. See: https://unece.org/statistics/making-data-meaningful

- Making Data Meaningful – Part 1 - A guide to writing stories about numbers
- Making Data Meaningful – Part 2 - A guide to presenting statistics
- Making Data Meaningful – Part 3 - A guide to communicating with the media
- Making Data Meaningful – Part 4 - A guide to statistical literacy
- Getting the Facts Right – A guide to presenting metadata (with examples on Millennium Development Goal Indicators)

4. Data Dissemination Standards

21.23 In 2001, seven international organisations, namely the Bank for International Settlements (BIS), the European Central Bank (ECB), Eurostat, the International Monetary Fund (IMF), the Organisation for Economic Cooperation and Development (OECD), the United Nations and the World Bank launched the *Statistical Data and Metadata eXchange (SDMX)* initiative and agreed to act as sponsors in order to develop common dissemination standards for the exchange of statistical information between public bodies at national and international levels. The SDMX information model covers various elements: descriptor concepts; packaging structure; dimensions and attributes; keys; code lists; and data structure definitions. The data structure definition is key as it conveys the data classification scheme that specifies the set of concepts required to describe and identify the statistical data items. Statistical compilers are encouraged to use SDMX in disseminating statistics to the international organisations which will improve comparability and ease of accessing data from across countries.

21.24 Countries are also encouraged to subscribe to the *IMF Special Data Dissemination Standard (SDDS or SDDS Plus)* or the *IMF Enhanced General Data Dissemination System (e-GDDS)* for those agreeing to basic standards. These data standard initiatives encourage member countries to improve data quality. The National Summary Data Page (NSDP) is a "data portal" for economies participating in SDDS Plus, SDDS and e-GDDS, allowing users to access data, view metadata or browse links to online datasets for all available categories for an economy. For economies participating in SDDS Plus and e-GDDS, the NSDP enables automatic exchange and sharing of statistical data and metadata in SDMX. Similarly, under the G-20 data gaps initiatives, several templates have been developed for the G-20 members to report data for various recommendations, for example, templates on non-bank financial intermediation (often referred to as shadow banking) and institutional sector accounts.

5. Release calendar

21.25 The availability of a release calendar in advance of publication is important for users. Knowing when the information is released and disseminated will inform user expectations and enable them to plan their activities accordingly. For example, they can schedule the preparation of topical analyses of data releases in advance of publication. The compilation and release schedule should be realistic for compilers, as users may become frustrated if statistical organisations do not meet previously announced release timings, and, at the same time, useful for users.

21.26 The release calendar should be published at the beginning of each year, or at least well in advance of the release date, on the websites of the statistical producers responsible for dissemination. This will also help to promote transparency and provide evidence that there has been no political or other inappropriate interference in the production and dissemination of official statistics.

6. Data revision and revision policies

21.27 Revisions are an essential part of data compilation in macroeconomic statistics. They will typically reflect new or improved data sources and methodologies but can also address corrections of past errors. Revisions, or alternatively expressed as updates or improvements, arise as a consequence of the trade-off between the timeliness of published data and their quality in terms of accuracy and comprehensiveness. Statistical producers often compile and disseminate provisional data that are then revised when new and more accurate source data become available. Attempting to avoid revisions by producing accurate but very delayed data would fail to meet users' needs for timely statistics. Regular communication with users well in advance of expected updates and improvements to published statistical data will develop better public understanding of why revisions occur and help to ameliorate negative responses.

21.28 Countries are encouraged to develop a well-designed revision policy that is managed and coordinated with related statistical domains and is communicated to users well in advance. Such a policy should aim to enable users to understand revisions in a systematic manner. The absence of coordination and planning of revisions can be perceived as a quality problem by users. An essential feature of a good revision policy is a predetermined schedule. Other features should include: reasonable stability from year to year; openness; advance notice of reasons for the revisions (perhaps also with some indicative size of the revisions); easy access for users to sufficiently analyse long time series of revised data; and adequate documentation on revisions in statistical publications and databases. To help users better understand revisions, the analysis of revisions is considered useful and may be published.

21.29 In some cases, the compiling agency may decide to carry out a special revision for the purposes of reassessing the data coverage or data compilation methods, which could lead to significant changes in the historical time series. It is recommended that such revisions be announced in advance and accompanied by explanations for such revisions, along with an assessment of their possible impact on the available data (see also the *UN Handbook on National Accounting Backcasting Methodology (forthcoming)*).

21.30 As part of the compilation and evaluation process, the published revisions should be evaluated to identify any persistent revisions to the earlier estimates of the aggregates or sub-aggregates in order to understand the potential for any systematic bias. This process will lead to identifying improvements to data sources and methods, thereby improving the quality of the future published estimates and reduce any revision bias. Composition of revisions and explanations for users is covered in section F.

C. Communication with users

21.31 Macroeconomic statistics should be designed to meet the needs of a wide variety of users making different uses of the statistics.

21.32 An understanding of the possible user needs is vital in identifying effective ways to communicate statistical information. Knowing who the users are helps to guide the content of the message being conveyed in a language accessible to all. Also, the content and the form of communication needs to be adaptable in responding to rapidly changing user needs, for example, during periods of significant economic change and major economic events (e.g., COVID-19 pandemic).

21.33 The user community includes a range of diverse groups such as government, business, academia, analysts, economists, researchers, journalists, international statistical agencies, the media and the public. For macroeconomic statistics, users can be grouped into two main categories: general data users and analytical users. General data users (such as general journalists, students, teachers, small businesses or ordinary citizens) generally have wide ranging but simple data requirements, while analytical users (such as government departments, local authorities, researchers, economic journalists, central banks and international organisations) generally have more complex data requirements on detailed variables, time series and regional or institutional sector breakdowns.

21.34 To meet the different demands the communication of macroeconomic statistics can take a variety of forms, for example:

- Scheduled regular statistical releases, typically made available online and sometimes also featured as press releases, who may be particularly focused on the main findings.
- Special topic-related publications or methodological-type papers may be prepared, including

time series and detailed data, accompanied by metadata and, on occasion, a short economic analysis based on these indicators.

- Highly comprehensive detailed macroeconomic statistics are usually presented in the form of scheduled annual datasets (or yearbooks) and made available online.
- Social media posts or similar short forms of communication can be used to supplement formal statistical releases and highlight newsworthy features of the published data to broader audiences.

21.35 Good standards of data visualisation in the design of tables and charts can have a role in the effective dissemination of statistics. There is also a role for independent users of statistical data to develop and maintain innovative or well-designed online data visualisations of official statistics. Statistical producers can encourage innovation of this kind by publishing appropriately extensive definitions and by making datasets available in technically compatible ways, for example, comma-separated value files.

21.36 As indicated, it is important to be aware of the user base and for each user base "what" should be communicated and "how" it should be communicated. The relevance of "what" is being communicated needs to be clearly understood, for example:

- Estimates versus forecasts. As the release vintages evolve, it would be useful to convey information on the increasing data content, thereby reducing data uncertainty.
- Current data versus historical (or archived) data.
- Level of aggregation.
- Micro data versus macro data.
- Metadata.
- Story or knowledge adding explanations to understanding the data movements.

21.37 In terms of the "how" considerations, different channels of communication should be considered, for example:

- Printed format (for example, press releases, newsletters, infographics, etc.) versus electronic (for example, PDF documents, Excel files, infographics, XML, downloadable datasets, etc.), or available in both forms.
- Different machine-readable formats that better suit users' needs.
- Internet release thereby addressing website design, search facilities, etc.
- Video releases, blogs, podcasts, presentations, live streaming, etc.
- Databases, tables charts, animations, etc.
- Social media.

21.38 As different users use a range of different devices, for example, desktop, laptop, tablet or smart phones, statistical producers should seek to ensure that their release modes remain as widely accessible as possible, and not limit their approach to just one design of online format.

21.39 Other aspects of statistical dissemination that may require consideration include:

- Freely available detail versus charged bespoke analyses requested by users.
- Regular analysis of press coverage and feedback to get early indication of changing user demands.
- User satisfaction surveys providing feedback to aid continuous improvement.
- Seminars, webinars, workshops and conferences involving different groups of users (and producers) to increase their awareness and sign-post developments.
- Providing training and education of macroeconomic statistics for users.

D. Communication with data suppliers

21.40 Similar to the engagement between statistical producers and users, various initiatives and engagements

between statistical producers and data suppliers are crucial. From the statistical producer perspective, there should be an effective data supplier engagement strategy as the suppliers have a significant stake in helping to produce high-quality official macroeconomic statistics. This strategy will need to reflect the different types of suppliers of information and the different ways the information is supplied, for example, business surveys, administrative data, household surveys, etc.

21.41 There is an ever-increasing need to improve data suppliers' experience in completing the demands from statistical producers. The strategy should help suppliers understand why their participation is important. With respect to individual units that serve as important suppliers of statistical data, for example, businesses, major corporations, banks, government departments, etc., statistics producers should promote cooperation by explaining the essential value of the required data; minimising the reporting burden as far as is reasonably practicable; assuring data suppliers that proper standards of security and confidentiality are applied; and acting on their feedback as appropriate.

21.42 The following key principles are important to reflect on:

- Providing choice to data suppliers (e.g., telephone data entry, secure electronic file transfer, etc., in addition to traditional paper submission) and recognising that their time is valuable.
- Minimising impact or burden on data suppliers (e.g., fair and equitable when it comes to how often they are selected in survey samples, only asking for the information once or minimising any duplication).
- Having high standards for how statistical producers communicate with data suppliers (e.g., standardised responses, phone call assistance and data collection, timely communication).

21.43 Producers of official statistics also need to consider the way they communicate with their data suppliers, who represent a unique set of stakeholders that may or may not be users of official statistics. In particular, the use of the concepts, terms and definitions that suppliers can understand is essential in collecting data to enable the compilation of statistics in line with the concepts, terms and definitions of the macroeconomic statistical standards, either directly or appropriately adjusted to meet the relevant definitions.

21.44 Data collectors may not be able to use the language, terminology, etc. used within the macroeconomic statistical standards when communicating with data suppliers. Instead, they need to converse with data suppliers using company accounting or administrative terms and definitions. To enable this, for example, the questions and notes on survey questionnaires should be tested with a sample of data suppliers or bridge tables may be needed to link the business survey data or administrative data to concepts and definitions needed to comply with those in the macroeconomic statistical standards. It is important to use common concepts, terminology and classifications when designing business survey questionnaires in a language the supplier will understand as well as applying similar principles when publishing business survey results to aid the users. Comparability is not possible without some uniformity across the published business survey data. In addition, along with published data, some companies may provide more detail than published in the format of financial statements or using bespoke survey questionnaires designed by the producer in conjunction with the company which will require appropriate conversion for macroeconomic statistical purposes.

21.45 Often it is an accountant that responds to official statistical producers' requests. They tend to be more familiar with business accounting concepts, terms and definitions than those used in the macroeconomic statistical standards. Data collectors also need to be aware of any changes to the business accounting rules, including changes to terminology, to ensure the data collected remain valid. Sometimes the accountant may not be able to provide all the data needed, for example, labour related information such as hours worked, persons employed, etc. may need to be collected from the human resource (personnel) department. Here, it is important to ensure the information provided is consistent, for example, covering the same reference period.

21.46 Statistical producers can also use online platforms like crowdsourcing which invite the public to share data and information as well as collect data which would be unavailable to data collectors through the usual channels. Other new channels that may be utilised include artificial intelligence providers. However, given the novelty of these data sources, statistical producers would need to ensure that methodological and quality issues are appropriately addressed.

21.47 Data collectors could provide feedback to data suppliers on the quality, including accuracy and reliability, of the data they provide. This feedback loop allows data suppliers to address any issues or errors in their data submissions and helps maintain, or improve, data quality standards. Other examples of effective

communication to improve the supplier experience that could be considered include:

- A survey calendar that gives suppliers an indication of when they can expect to receive a questionnaire.
- Sharing of survey results to which they have contributed.
- Personalised statistical feedback, including sharing tables with suppliers where they can see their own contributions to the totals.

E. Statistical confidentiality

21.48 In terms of statistical confidentiality, by law, most official statistics producers collect data from businesses, government bodies and households for statistical purposes only and mostly under some form of legislation. Statistics based on these data generally cannot be disseminated, sold, or published in a way that permits the identification of data referring to a particular business or household. Thus, it is important to ensure appropriate data confidentiality policies, anonymisation techniques and disclosure checking procedures are in place as part of the process before publication of any data. There is EU guidance covering the *General Data Protection Regulation (GDPR)* and the protection of micro data as well as the UNECE Statistical Disclosure Control Committee endorsed book, *Statistical Disclosure Control*.

21.49 One of the most important policy concerns relevant to data dissemination is the preservation of statistical confidentiality. Statistical confidentiality is necessary in order to gain and keep the trust of both data suppliers to statistical surveys and users of the statistical information. Principle 6 of the *UN Fundamental Principles of Official Statistics* stipulates that individual data collected by statistical agencies for statistical compilation, whether they refer to natural or legal persons, are to be strictly confidential and used exclusively for statistical purposes. It is therefore important that appropriate disclosure checking procedures are in place as part of the dissemination process. In any case, permissions need to be sought from a business to publish information that would otherwise be considered confidential so as to avoid the loss of fundamental pieces of statistical information. It is also important to clearly communicate confidentiality statements and arrangements to data suppliers and users. In some cases, confidential information may be provided to a specific, limited number of users under strict and agreed conditions for the purposes of validation and quality assurance before its official release. For example, where data validation by an external organisation or a specific expert is necessary or significant benefits as part of data quality assurance are expected or have been previously demonstrated. Such specific cases should be adequately publicised for transparency, for example on the website of the statistics producers.

21.50 As much as statistical confidentiality is very important, it should not be used in itself as a reason not to release information. Instead, the goal should be to maximise the dissemination of information as a public good for the wide range of users, while still ensuring confidentiality obligations are met. It should be recognised that as more granular information is collected to meet increasing user demand for more detail, this may lead to more cases of disclosure and suppression or aggregation of cells.

21.51 On a global scale, there is a growing challenge to ensure the data for multi-national enterprise (MNE) groups are properly and adequately covered (see also chapter 23 on Globalisation). The various impacts of globalisation (e.g., cross-border flows like intellectual property products, impact of change in economic ownership, merchanting, etc.) imply that domestic only data collection is insufficient to ensure all activities of the MNE group are adequately captured worldwide as well as to ensure that asymmetries in external trade and in transactions and positions in financial assets and liabilities are reduced to the extent possible. Respecting individual jurisdictions' rules on confidentiality, there is a need for statistical producers to be able to exchange data, share data and reconcile the activities of MNE groups. This requires setting up of appropriate legal agreements and utilising secure channels to enable data exchange. More details are provided in the *UNECE Guide to Sharing Economic Data in Official Statistics.*

21.52 For researchers, alternative approaches allowing access to micro data for statistical or research purposes should be considered, for example:

- Secure data labs to allow researchers to access and analyse micro data, whereby the research published does not reveal any confidential data.
- Signed data access agreements, which allow access, with limited time, to secure online data areas for specific research or analyses.

F. Taxonomies and metadata

21.53 When statistics producers publish macroeconomic statistics, they also need to provide information about the product and context of the released statistics in order to enable users to properly use and adequately interpret the data.

21.54 This section provides guidelines, including taxonomies, that statistical producers should consider integrating into their current communication practices as appropriate. These practices will assist users and, if standardised, help to improve cross-country comparability.

1. Metadata

21.55 Metadata may be understood as "data about data" that can enable and facilitate sharing, querying, understanding and using statistical data across process stages such as collection, compilation and dissemination. Metadata apply to data definitions at different levels of aggregation, from micro data to macro data. Accessible and comprehensive metadata also promotes data literacy by helping users navigate complex statistical concepts and understand the nuances of economic indicators. They encompass administrative facts about the data such as who created them and when, and the definition of the concepts applied along with a description of how the data were collected and processed before they were disseminated or stored in a database. Metadata are important for both producers and users. Common standards and definitions for metadata should be followed to the extent possible throughout all statistical domains, in order to facilitate the linking and integration of statistical information such as the examples covered in paragraphs 21.23 and 21.24.

21.56 Metadata dissemination should be an integral part of the dissemination strategy. As metadata are generated and processed during every step of the compilation process, there is a strong need for a metadata management system to ensure that the appropriate metadata retain their links with data. A good practice in this regard is the active linking of metadata to the statistical data that they describe, and vice versa, by implementing a system that allows metadata to be recorded as part of the data infrastructure throughout the various stages of the statistical production process.

2. Releases and vintages of data

21.57 National statistics producers have developed a range of practices for communicating statistical outputs, updates and methodological changes to users. These practices have greatly assisted with the interpretation and use of national accounts, external accounts and government finance statistics data as well as various other statistical domains. This variation in nationally determined approaches reflects the historically limited available guidance on aspects of dissemination and communication in macroeconomic statistical standards. For example, countries use phrases such as provisional, first, preliminary, second and final to communicate different vintages of economic statistics. Furthermore, the substance of a given release is communicated using terms such as initial estimates, mature estimates, final estimates, data revisions, benchmark revisions, rebased estimates, improvements to methods and corrections and experimental estimates.

21.58 Producers of macroeconomic statistics should match the need that users have for timely, high frequency economic data with their need for highly accurate economic data. In addition to balancing this trade-off between timeliness and accuracy, producers also need to match the expectations that users have for a long consistent time series with their desire for agile macroeconomic statistical standards that ensure an exhaustive measure of economic activity.

21.59 Vintages refer to the release of updated economic statistics for the same time period, resulting from the availability or processing of new data such as more detailed or benchmark data surveys as well as methodological improvements. Different vintages are a regular and anticipated part of the statistical production process. They should be consistently described and their release dates pre-announced in a release calendar. To illustrate this and the type of future releases, consider a national authority who releases an estimate of GDP for the first quarter of Year t, on May 30th, Year t. Between Year t and Year t+n, several revised estimates may be made for the first quarter of Year t as illustrated in the example below:

- June 30th, Year t: Q1 of Year t may be revised due to more data becoming available and due to seasonal adjustment.

- September 30th, Year t+2: Q1 of Year t may be revised due to benchmarking to annual estimates (through supply and use tables as well as revised seasonal adjustment analyses).
- May 29th, Year t+3: Q1 of Year t may be revised due to the results of, for example, an economic census or a benchmark survey.
- September 30th, Year t+n: Q1 of Year t may be revised due to the implementation of the new international standards for macroeconomic statistics.

21.60 Adherence to standardised definitions to describe different vintages of macroeconomic statistics will improve the use and interpretation of economic data. As well as the title and definition of the data release, the user needs to know the reference period to which it relates, the date of the release, and the origin and quality of the sources. Consistent presentation standards can facilitate data comparisons between countries.

21.61 Statistical producers should adopt the proposed common approach when communicating different releases or vintages of data to users. The description of the release, at a minimum, should include information about the: (i) substance of the release; (ii) timeliness; (iii) frequency; (iv) the reference period; and (v) the update period. Defining, describing and communicating vintages of data is a complex undertaking. Before outlining this recommendation in detail, it is important to first establish a set of terms and definitions that help frame the recommendation, as shown in Box 21.2.

21.62 Together the terms, routine updates, benchmark updates, comprehensive updates are the recommended terms to be used when communicating the "extent" or "substance" of revisions. The first two terms mainly reflect the vintage of source data that enter the compilation process. The term comprehensive update reflects the addition or changes to concepts, methods (substantial changes), classifications or presentations. All other terms should preferably be phased out as part of the implementation of the 2025 SNA.

21.63 To illustrate the standard format recommended for communicating the notion of "substance", series, reference period, timeliness, frequency, type of update and update period to users, consider the following example. Assume that on average the first, second and third vintages of quarterly GDP are published 30, 60 and 90 days after the reference period, respectively. Assume further that the estimates are based on incomplete source data (such that each vintage is a result of a routine update). These vintages could be categorised as shown in table 21.1.

Table 21.1: Naming convention – quarterly GDP (successive vintages for the same reference period)

Series	Reference Period	Timeliness	Frequency	Type of Update	Update Period
GDP	First quarter, Year t	30-day	Quarterly		
GDP	First quarter, Year t	60-day	Quarterly	Routine	Year t, Q1
GDP	First quarter, Year t	90-day	Quarterly	Routine	Year t, Q1

Box 21.2: Terms and definitions related to different vintages of economic data releases

- **A data point** is a discrete unit that can be represented numerically. There are different sources and methodologies such as data collected, measurement of data based on data collected and model-based estimates.
- **A time series** is a series of regular time-ordered data values of a quantitative characteristic of an individual or collective phenomenon taken at successive, in most cases equidistant, periods/points of time.
- **A data vintage** is a data value or a dataset (sequence of values) for a given reference period that has been released for use at a particular point in time (release period). A new vintage of data is established when the same set of data for the same reference period or some overlapping portion of the reference period is released for use at a different point in time (release period).
- **A reference period** is the time-period represented by the data.
- **The update period** is the time-period over which revisions to a data value have been applied.
- **A release period** represents the calendar date when the data are released to the public.
- **An update** is a revision which is defined as the numerical difference between two vintages of the same data point.
- **A regular or routine[1] update** relates to the incorporation of scheduled, more complete (not necessarily final) source data, improved models, or other iterations of the compilation process. Regular revisions occur for both sub-annual and annual estimates and can occur throughout the year, at regular (often yearly or quarterly) intervals, or as new information becomes available. Regular revisions may also include for example, the impact of seasonal adjustment, the correction of compilation errors or minor methodological adjustments made outside the benchmark or comprehensive revision process.
- **A benchmark estimate** is the final vintage of a dataset, whereby there is no further expected improvement. It is compiled using the most comprehensive and highest quality source data and the most advanced methods at that point in time. Benchmark estimates are not expected to be further revised and therefore are often referred to as the "final" estimate. However, a change in the definition of the concepts used, the application of new macroeconomic statistical standards or the use of new data source and methodologies can change a benchmark estimate; see "comprehensive update" below.
- **A benchmark update** reflects revisions from the incorporation of a benchmark estimate(s) into a given set of macroeconomic statistics or accounts.
- **A comprehensive update** is a special case of benchmark update where the revision to the macroeconomic dataset not only incorporates the final vintages of source data but also integrates new or updated concepts, the application of new accounting treatments, classifications or substantially improved methods or updating a base year. These generally occur when there are major changes to the macroeconomic statistical standards that are used to compile the accounts. These types of revisions often result in a discontinuity in the time series and a need for compilers to consider whether to apply methods such as back-casting to adjust historical data.

21.64 These vintages should be communicated as:

- Quarterly National Accounts release, first quarter Year t – 30-day
- Quarterly National Accounts release, first quarter Year t – Routine update – 60-day (Year t Q1 revised)
- Quarterly National Accounts release, first quarter Year t – Routine update – 90-day (Year t Q1 revised)

21.65 For users' reference, in line with the releases above, the vintages could be recorded using the real-time releases with the information as shown in table 21.2 where it can be seen how the estimate for each

[1] A regular / routine update can be referred to as either regular or routine with the same meaning and used interchangeably – hereafter, routine is used.

period changes, or not, in successive releases.

Table 21.2: Recording vintages of data in real-time tables: quarterly GDP

Series	Frequency	Release Date	Type of update	Q1 2024	Q4 2023	Q3 2023	Q2 2023	Q1 2023
GDP	Quarterly	June 30th, Year t	Routine	99	95	90	85	80
GDP	Quarterly	May 30th, Year t	Routine	102	95	90	85	80
GDP	Quarterly	April 30th, Year t	Routine	100	95	90	85	80

Note: The numbers in the table are for illustrative purposes only.

3. Sources of updates or revisions

21.66 The macroeconomic statistical standards have three basic features. Firstly, they define the concepts to be measured. Secondly, they outline the methods that can be used to "quantify" those concepts and the accounting rules that need to be followed when recording various flows and stocks. Thirdly, they identify the classification systems, accounts, and table structures that should be used to present the data. One or more of these features can be the source of revising datasets or the presentation of datasets.

21.67 Statistical producers should consider categorising and decomposing the source of the updates (revisions) into different categories reflecting the source of the updates. These can include for example:

- "Conceptual changes" covering the alignment to an updated set of macroeconomic statistical standards.
- "Methodological changes" encompassing, for example:
  - coverage adjustments (for example, exhaustiveness);
  - changes to source data (for example, new results based on improved methodology for grossing up survey results, replacing modelling algorithm with a survey-based estimate, etc.);
  - quality improvements (for example, data validation, consistency of source data results, seasonal adjustment, etc.); and
  - accounting rules to be followed (for example, changes from cash to accrual accounting).
- "Presentational changes" covering new tables, charts, revisions triangles, granular detail, etc. The aggregate(s) may not change but the way in which the components are presented are changed.

21.68 Such a decomposition should depend on the source and size of the revisions and may be broken down further, if appropriate (for example, if a single update (revision) combines multiple issues or affects multiple accounts), in order to help users' interpretation. Levels and growth rates effects of updates should be distinguished. Producers may also wish to consider showing all the components of the revision(s) for a single period or across all periods revised.

4. Types of statistical products

21.69 Statistics producers seek to disseminate established formats and content choices in statistical releases. They also seek to develop new releases or indicators in response to meeting changing user demands or public priorities or as new data collection projects come on stream. These can include developmental versions of statistical products, sometimes termed experimental statistics (or similar labels) that may not be of the quality required for data assured as existing products.

21.70 Whatever the descriptor, the common theme is to communicate issues of quality such as whether:

- the estimates comply with nationally or internationally adopted conceptual and methodological standards;

- the source data used to compile the estimates are reliably defined and produced; and
- the compiling agency is producing the statistics in an exploration or in a development phase or is otherwise expecting user feedback on the data.

21.71 It would be helpful for users if a consistent taxonomy could be adopted and applied through time and across countries to communicate the quality of the data. It is recommended that a two-level taxonomy for classifying product quality be adopted as shown in table 21.3.

Table 21.3: Statistical product quality: two-level taxonomy

Level 1	**Official Statistics:** Estimates that incorporate recommended nationally or internationally adopted concepts, methods, accounting rules and classifications and meet all the quality standards required.
	Official Provisional Estimates: Estimates that incorporate nationally or internationally adopted concepts, methods, accounting rules and classifications, but represent an early estimate before more comprehensive data becomes available.
Level 2	**Experimental Estimates:** Statistical products with estimates that vary in more or less limited ways from nationally or internationally recommended concepts, methods, accounting rules or classifications but where the producer has good confidence in their validity.

21.72 The first level of official statistics includes official statistics and official provisional estimates. A key distinguishing feature of provisional estimates is that there is an expectation that these early estimates will soon "graduate" to a revised, more mature official statistics status as the methods already meet the standard required. Statistical producers may compile and disseminate provisional data a number of days after the period in question or when a target data content has been achieved. The provisional estimate will mature to the full official estimate once new or more accurate source data become available. It is also possible within the same vintage of release that some data items might be "official" and others "official provisional", for example, the observations for the latest period.

21.73 The second level reflects experimental estimates released by a statistical producer. Often, they may be of a research or indicative nature or based on a range of modelling assumptions. The source data used to compile the estimates may be untested and its quality may not be quantifiable as would be the case with Level 1 official statistics, or they may be based on indicators/proxies which may not conform to the concepts required. The data are communicated with a "proof of concept" notion and the main motivation for releasing them is to seek feedback so the estimates can be improved upon. However, with a range of improvements, they may meet the standard to be deemed as an official statistic. These releases tend to be more ad hoc with respect to frequency of updates.

21.74 In addition to the need to communicate the quality of a product to users there is also a need to situate the product within the overall framework. Table 21.4 shows the taxonomy of the different accounts / tables and their relative placement.

21.75 The integrated framework of the SNA is a framework covering a set of inter-related accounts and tables that trace economic activity from production to distribution of income, expenditure, saving, capital formation, financing, revaluation and other changes affecting stocks, to balance sheets representing stocks of assets and liabilities. In addition to a "prescribed" list of accounts and tables (i.e., sequence of economic accounts, supply and use tables, labour market tables and the table on capital services), the SNA also recommends that countries produce additional information in the form of supplementary accounts/tables, thematic accounts/tables and extended accounts/tables, etc. – all of which have a status different from that of the integrated framework of national accounts and briefly shown in table 21.4.

Table 21.4: Taxonomy of the different accounts/tables and their relative placement within the SNA

Economic Accounts / Tables	Placement
Integrated framework of national accounts	Form the main accounts/tables within the SNA, consisting of the sequence of economic accounts, the supply and use tables, the labour market tables and the table on capital services; they all apply the asset and production boundary as defined for the integrated framework.
Supplementary accounts/tables (e.g., input-output tables, from-whom-to-whom tables, and regional accounts)	Operate within the asset and production boundary of the integrated framework, and provide additional information that supplement the accounts/tables of the integrated framework.
Thematic accounts/tables (e.g., education and training, health, tourism, sport, creative sector, etc.)	(Mainly) operate within the asset and production boundary of the integrated framework, and provide additional detail on a certain aspect or theme.
Extended accounts/tables (e.g., unpaid household service work, human capital)	Operate beyond the asset and production boundary of the integrated framework, and provide statistics using different concepts and definitions.

21.76 Users would benefit if statistical producers followed similar practices and common definitions when referencing the products or statistical outputs associated with a particular international statistical standard. Doing so, users will better understand how the different accounts and tables fit together and how they compare across countries. In addition to defining a certain account, there is also a need to delineate between those accounts that are part of the sequence of economic accounts and those outside the sequence of economic accounts.

21.77 Accounts as defined within the integrated framework of the SNA have an opening and closing item linking revenues and expenditures in the case of income accounts, and (changes in) assets and (changes in) liabilities and net worth in the case of accumulation accounts including balance sheets. Accounts are also related to each other such that the closing balance of one account can be the opening balance of the subsequent account. The term "table" is distinguished from account in that tables do not have a balancing item and are not part of the sequence of economic accounts. Specific tables tend to be further elaborations of an account or several accounts, and typically illustrate particular aspects.

21.78 The macroeconomic statistical standards also offer the flexibility to develop thematic accounts/tables. They typically provide statistical producers the opportunity to experiment with both the classification, concepts and presentation to provide a fuller, more detailed picture of certain activities. A more general description of thematic accounts/tables is provided in chapter 38 on Thematic and extended accounts. Specific examples, such thematic accounts on education and training and digital supply and use tables are elaborated in relevant chapters.

21.79 The macroeconomic statistical standards also include recommendations related to the development and dissemination of extended accounts/tables. They mainly involve extensions of the asset and/or production boundary applied in the integrated framework of the SNA. The most important examples relate to the extended accounts on unpaid household service work and those on human capital. Recommendations for supplementary tables are provided throughout the SNA.

5. Presenting the tables and accounts

21.80 The integrated framework of the SNA presents an overview of the main accounts and tables. Within this framework, the sequence of economic accounts is broken down by institutional sector(s) as well as the rest of the world. The full set of transactions, other flows and stocks are broken down into the different accounts from the production account through to the balance sheets. To avoid over-crowding the sequence of economic accounts, there may be further breakdowns, for example by industry, by product, by function, by type of flow, by type of asset/liability, etc.

21.81 In the integrated framework of the SNA, specific unique codes are shown where applicable as covered in Annex 2, for example, S – (institutional) sectors and sub-sectors, B – balancing items, P – products,

D – distributive transactions, F – financial transactions, etc. Each of these categories may have different levels or types of further breakdowns, some of which are covered below.

21.82 To aid cross-country comparisons and to aid the user, it is recommended that statistical producers "publish" a range of other breakdowns using the agreed international classifications and their respective hierarchies within those classifications. For example:

- In terms of industry breakdowns. Output, intermediate consumption, (components) of value added, gross fixed capital formation, changes in inventories and labour input can all be split by industry using the *ISIC*. The *ISIC* splits the economy by industry at the section level (one letter codes, for example, A – agriculture, forestry and fishing, B – Mining and quarrying, etc.). These sections are further split into divisions using two-digit numeric codes, for example, separating out 01 – agriculture, 02 – forestry and 03 – fishing. These divisions can then be further split into groups, and in turn further split out into classes. Countries can, and do, have greater level of detail depending upon the activities in the economy.
- In terms of functional links. Household final consumption expenditure is typically published as an aggregate, but can also be published using the two-digit categories known as "divisions" of the *COICOP*. For example, 01 – Food and non-alcoholic beverages, 02 – Alcoholic beverages, tobacco and narcotics, etc. More detail can be published for each of the two-digit COICOP divisions, split further into groups, in turn split further into classes.

21.83 Examples of other additional tables which are useful for a range of users providing variations supporting an aggregate, for example:

- Gross Value Added (GVA) can be presented by institutional sector, by market and non-market sectors, and by public and private sectors.
- Household final consumption expenditure can be shown split by type of goods characterised by durability (non-durable, semi-durable and durable), services and the link between the national and domestic concepts (i.e., resident's expenditure abroad and non-resident expenditure within the economic territory).
- Gross fixed capital formation and changes in inventories can be analysed by industry or by institutional sector or by type of asset.

21.84 Countries' own classifications may have a greater level of detail and will depend upon the scale or uniqueness of the activity in the economy, resources available for data collection and user needs. Nonetheless, these national classifications for publication and dissemination should preferably align either one-to-one or many-to-one to the international classifications.

21.85 The data collection, compilation or balancing may take place at different levels reflecting, for example, the diversity of the economic activity and resources available to the statistical producer. However, allowing for statistical disclosure, the publication levels should reflect the international classifications. For example, if the *ISIC* is used consistently, as described in paragraph 21.81, this would enhance the quality of labour and capital productivity analyses within an economy as well as international comparisons. Also, the use of the correspondence tables linking the different classifications would enhance the user's linking and analytical capability.

21.86 For further details, see annex 2 of the 2025 SNA, which contains the classification hierarchies and associated codes for the SNA, and also shows references to other international classifications that may be used.

G. A framework for measuring alignment with the international macroeconomic statistical standards

21.87 An important feature of the macroeconomic statistical standards is their ability to develop internationally consistent macroeconomic statistics which in turn facilitate the comparison of estimates across countries. However, when countries use a macroeconomic statistical standard to compile macroeconomic statistics, they have discretion in implementing the recommendations to accommodate their specific circumstances while maintaining comparability and quality to the extent possible. These circumstances could range from limited resources, data availability and systems constraints to meeting user needs and policy demands. For pragmatic and resourcing reasons, the macroeconomic statistical standard recommendation may also not be implemented, if an activity or concept is economically immaterial for a given economy.

This results in varying degrees of "alignment" to these standards across countries. For users to be confident when making cross-country comparisons, they need some assurance that the economies' estimates are compiled on the same basis.

21.88 A set of internationally accepted alignment frameworks (e.g., for the SNA, *BPM* and *GFSM*) have been developed to provide structured, systematic and consistent methods to assess an economy's alignment to these standards. These alignment frameworks draw heavily on existing assessment frameworks and tools available to users. For example, the *IMF Data Quality Assessment Framework* and *IMF Reports on the Observance of Standards and Codes (ROSCs)*, the *UN Data Quality Assessment Framework*, and the *ISWGNA's Minimum Required Data Set*.

21.89 The alignment frameworks are stand-alone tools intended for national statistical authorities and international agencies to assess macroeconomic statistical methodologies and processes at country or country-group levels.

21.90 These alignment frameworks are voluntary and based on self-assessment. They allow countries periodically to assess their macroeconomic statistics and development programmes. It is important for statistical producers to maintain transparency and document any deviations or adaptations from the macroeconomic statistical standards in their metadata and methodological notes. They are thus encouraged to use these common frameworks and make the results publicly available in accessible ways for all users. This section focuses on the alignment framework for the SNA domain. The alignment framework is structured around the key building blocks of the statistical standards – concepts and definitions, methods, classifications and the resulting accounts tables that are produced and published.

1. Alignment framework for the 2025 SNA

21.91 The 2025 SNA alignment framework described below reflects a degree of flexibility and is relatively easy to implement, update and communicate after an initial set-up investment. It is structured around four key high-level components:

- Concepts and definitions, which reflect the articulation of a macroeconomic activity, interaction, state or ideas. Concepts describe what gets measured.
- Methods, which describe how a compiler has implemented an accounting rule or measures a concept.
- Classifications, which determine the level of detail and its conformity or otherwise with the 2025 SNA classification schemes used by compilers and presented to users, for example, by industry, product, region, functional categories or instruments.
- Accounts/tables, which outline how information is presented to users. The SNA has a set of accounts or tables that form the basis of the respective standards, which in turn have been used as the basis of the structure of the alignment frameworks.

21.92 These four categories serve as an overarching structure for the alignment frameworks. Given the SNA has many concepts and definitions, accounting rules, methods, classifications and accounts/tables, to be pragmatic only a subset is expected, in the sense that the individual items to be included in the framework focus on those categories that impact the interpretation and assessment of levels and growth rates. Using these criteria, a brief overview of the 2025 SNA alignment framework with a few example questions is shown in table 21.5. Consistent and similar detailed lists have been developed for the *BPM*, or will be developed for the future update of the *GFSM*. The proposed levels and the categories of alignment provide flexibilities to help economies share details based on the level of development of their national statistical system.

21.93 It is worth noting that balance of payments data and rest of world data in the SNA sequence of economic accounts may need to be reconciled given there could be two potential data sources presenting essentially the same information from two different perspectives. Where reconciliation is not made, differences will exist and these would need to be explained.

Table 21.5: Overview of the SNA Alignment Framework with a few examples of the questions

Metadata

Last benchmark year for GDP?	
Latest period for which balanced SUTs are available?	
Latest period for which institutional sector accounts are available?	
Do you have a published revision policy?	

Concepts and definitions, methods, classifications and accounts / tables

	Fully Aligned	**Highly Aligned**	**Broadly Aligned**	**Partially Aligned**	**Not Aligned**	**N/A**	**Comments**
Concepts and definitions							
Units of the economy							
Production boundary covers:							
Informal economy							
Underground economy							
Illegal activities							
IPPs							
Methods							
Accounting rules							
Valuation							
Time of Recording							
Sub-annual series are seasonally adjusted							
Output and intermediate consumption are deflated by appropriate price indexes at basic prices or at producer prices consistently							
Volume indexes are chained-weighted							

Classifications

Classifications Standard	**Version**	**Level of Detail**	**Used for SUTs? (Y/N)**
International Standard Industrial Classification (ISIC)			
Central Product Classification (CPC)			
Classification of Individual Consumption According to Purpose (COICOP)			
Institutional sector, asset and transaction classifications			

Accounts / Tables

Category	**Timeliness** **(e.g., T+30 days, T+3 months, etc.)**	**Granularity** **(Number of industries or number of transaction lines)**
Annual value added by industry and GDP in current prices and in volume terms		
Annual GDP by expenditure in current prices and in volume terms		
Annual GDP by income in current prices		
Annual sequence of accounts for the total economy (until net lending/borrowing)		
Annual rest of the world accounts (until net lending/borrowing)		

2. Benefits to users and producers

21.94 At any given time, it is likely that different countries may be conforming to different editions of the macroeconomic statistical standards or with varying extents of implementation, for example, 1993 SNA, 2008 SNA or 2025 SNA. As a result, cross-country data may not be directly comparable because of variations in aspects of the underlying concepts, methodologies and coverage of the data by the different economies. The proposed alignment framework provides a structure for users to assess national statistical practices in a comparable way.

21.95 The alignment frameworks bring several key benefits for national users and the international community. The degree of alignment with the macroeconomic statistical standards provides important signals to users about the quality of cross-country comparisons and the extent to which major revisions should be expected in the future, in cases where an economy is not aligned with the latest macroeconomic statistical standards. The alignment frameworks also provide a mechanism to present and communicate this information to users in a standardised manner.

21.96 The proposed alignment framework would assist users in making cross-country comparisons. To illustrate, consider two countries A and B. Country A indicates it uses the 2025 SNA to compile its national accounts, but does not record some of the smuggling activity, for example, the household final consumption expenditure of the smuggled products. Country B also uses the 2025 SNA and records smuggling activity in its national accounts and balance of payments. When comparing the data on gross value added, household final consumption expenditure and the cross-border flows of the two countries, it is important for the user to understand these differences. Country A may not record smuggling because these activities are not material for that economy or it may be material but the compilers may have no data. If it is not material, then Country A should be encouraged to provide this information to users so that they do not attempt to compensate for the different treatment when making the cross-country comparisons.

21.97 The alignment information also benefits producers of statistics to identify areas for improvement, prioritise resources and formulate strategic plans to align better to the macroeconomic statistical standards as well as assist users to make appropriate adjustments to achieve comparability in their analyses, among others. In addition, this type of detail will help to give users assurance of the statistics and increase their capacity to provide feedback on future priorities and demands.

21.98 It should be noted that the alignment frameworks do not offer a comprehensive evaluation of the quality of an economy's macroeconomic statistics as this would require a more rigorous, and different, type of investigation. It is to be expected that the design and application of alignment frameworks will evolve over time.

3. Communicating the alignment framework with users

21.99 Having established and completed the alignment framework, it is important how compilers communicate this information to users to ensure it is understood and used appropriately. It should not be used as a form of a scoreboard due to the various flaws in establishing a highly subjective weighting system (e.g.,

aligning to concepts is, or is not, more important than aligning to accounting rules). Instead, it is recommended that a dashboard approach is taken. Such an approach does not attempt to quantify or summarise the information but will still provide useful information to users in a simple, straightforward and flexible manner.

21.100 Many of the items in the alignment framework can be structured to provide a "yes" or "no" response, however this may not deliver the granularity needed by users to properly interpret the results. As the framework is intended to measure the degree of alignment to a standard, it is better to show the notion of "degree" of alignment, for example, for each question or group of questions, the compiler can indicate whether the country is:

- Fully aligned with the standard – meaning that between 95-100 per cent of the guidelines and standards have been implemented.
- Highly aligned with the standard – meaning that between 75-95 per cent of the guidelines and standards have been implemented.
- Broadly aligned with the standard– meaning that between 50-75 per cent of the guidelines and standards have been implemented.
- Partially aligned with the standard – meaning that between 25-50 per cent of the guidelines and standards have been implemented.
- Not aligned with the standard – meaning between 0-25 per cent of the guidelines and standards have been implemented.
- Not applicable – meaning that for reasons of immateriality or irrelevance, the standard has not been implemented. Materiality in this context is subjective but a steer would be that the issue accounts for less than 0.05 per cent (and/or a monetary equivalent) of GDP.

21.101 The introduction of the notion of "per cent aligned" does introduce some subjectivity and flexibility into the exercise, thus a range approach is adopted as it is difficult to define (and impossible to measure) what would constitute being 100 per cent aligned to a concept, accounting rule, method, etc.

21.102 The fully aligned, partially aligned and not aligned categories are appropriate when considering concepts and definitions, methods, and accounting rules but not when considering classifications used, tables or accounts. It is proposed that the timeliness (days released after the reference period) and granularity (number of detailed classes) be used in "quantifying" the alignment of tables and accounts to a given standard.

21.103 It is recommended that the dashboard be presented in digital format and included as a part of the sources and methods documentation for a given macroeconomic statistical standard. The assessment can be done for the entirety of a macroeconomic statistics or it can be completed for individual accounts or tables. It is also recommended that the assessment be colour coded, which avoids spurious precision and allows easy to understand and quick messages to be conveyed such that:

- Fully aligned = Green
- Highly aligned = Light green
- Broadly aligned = Yellow
- Partially aligned = Light yellow
- Not aligned = Red
- Not applicable = Black

H. Prominence given to indicators other than GDP and the clarification of the use of the term "net"

21.104 The role and prominent use of GDP and other gross measures has been well established in the integrated framework of the SNA. However, the role and prominence of other indicators as well as net measures in macroeconomic statistics has increased significantly in recent years as users demand an enhanced set of national accounts data that better support well-being and sustainability analysis. For example, net domestic product (NDP), net national income (NNI), household disposable income, consumption, saving

and net worth, whereby measures of household income and wealth may be disaggregated by type of household and other characteristics, are already available. As signified in chapter 2 on National accounts and its contribution to measuring well-being and sustainability, in some respects, the net measures are more important than the gross counterparts for capturing (environmental) sustainability considerations. Net measures are conceptually preferred as they are more reflective of the actual costs borne in production. However, the measurement challenges make it more difficult to arrive at comparable aggregates across countries.

21.105 Thus, the importance of placing a greater emphasis on net measures and the indicators named above should be reflected in the outputs of the statistical offices. It is highly recommended to present net measures alongside the gross measures, not replacing but supplementing the gross measures. However, for the purpose of putting greater emphasis on net measures, it is needed to further improve their quality and timeliness.

21.106 The 2025 SNA reflects an improved articulation of the differences in the concepts of depreciation (related to produced assets) and the notion of depletion (related to non-produced natural resources). In the 2025 SNA, both are treated as costs of production. Thereby the conceptual advantage of using net measures such as NDP and NNI becomes clearer, requiring greater emphasis than previously needed, although users may still be interested in the gross counterparts.

21.107 There are now two components of the gross to net adjustment, for example, from GDP to NDP, i.e., depreciation and depletion. This is a significant change for users to be made fully aware by the way in which the tables are presented. An example to show the distinctions is given in table 21.6. Showing estimates of both components allows users the flexibility to use either version to meet their specific needs.

Table 21.6: Moving from gross domestic product (GDP) to net domestic product (NDP)

Transaction / Balancing item	Code	SNA data set
Gross domestic product	B1g	1 869
Depreciation (−)	P51d	222
Depletion (−)	P8	30
Net domestic product	B1n (= B1g – P51d – P8)	1 617

21.108 There is also a need to clarify the use of the terms net and gross for both producers and users to avoid confusion. Statistical producers should only use the terms net and gross in the following two areas:

- Firstly, in conjunction with the balancing items for each account by institutional sector and the whole economy, where the difference is due to the costs of depreciation and the costs of depletion.
- Secondly, in relation to financial accounts for which: (i) aggregating acquisitions less disposals for each financial instrument on the asset side and on the liability side; (ii) aggregating changes in assets and changes in liabilities and showing both on a net basis. Only this first way of netting is recommended in the SNA sequence of economic accounts. For further details, see paragraphs 4.246 to 4.251.

21.109 All other uses of the term net tend to be legacies that need to be removed or act as a short-hand description, for example, net exports should be replaced with exports less imports. This has been reflected with the removal of the word net in the examples shown in table A4.2. These and other such terms should be expressed in full to avoid any user confusion or misinterpretation.

I. Use of more understandable terminology for users

21.110 The presentation of macroeconomic statistics can have a significant impact on how the statistics are

interpreted and used. The macroeconomic statistical standards depend on an extensive use of technically precise terminology and specialised constructs that may not be widely understood outside of the domain of economic statistics. Indeed, there may be situations where current terminologies are used inconsistently even within macroeconomic statistics.

21.111 Therefore, macroeconomic statistics should be presented and communicated in such a way that the full extent of their analytical usefulness, quality, scope, comparability and policy applications is maximised and reflects the wide user base. To this end, the terminology and branding of the macroeconomic frameworks need an international communication strategy that aligns with the latest technology and current cultural norms.

21.112 The macroeconomic statistical standards have lots of similar technical descriptions of concepts and underlying definitions with explicit inclusions and exclusions. The commonality of the labels and concepts help the producers and facilitate communication across the producers' community. However, they are often not user friendly or understood by users, and it is important that statistical producers target their communication.

21.113 To improve the consistency, readability and understandability for non-specialists, a new feature of the 2025 SNA and *BPM7* has been the development of a common glossary of terms and definitions used in macroeconomic statistics. This glossary reflects input from across several existing standards and manuals: SNA; *BPM; European System of Accounts (ESA); Government Finance Statistics (GFS); Monetary and Financial Statistics (MFS); System of Environmental-Economic Accounting (SEEA); International Public Sector Accounting Standards (IPSAS)*; and guidance from the Bank for International Settlements (BIS). This glossary thus delivers a further level of harmonisation across macroeconomic statistical standards and provides users with a clearer and more consistent understanding of key economic terms and definitions together with some alternative easier to understand terms. The glossary can be found at the end of this publication.

1. Main changes in terminology used in the 2025 SNA

21.114 Significant steps have been made to harmonise the concepts and methodologies in the macroeconomic statistical standards, in particular within the body of the 2025 SNA and *BPM7* without changing the technical definition(s). This effort has also been reflected in the new common glossary of macroeconomic statistics mentioned in the above, the further alignment of terminologies across international standards (affecting variables, account labels, etc.), and improved the branding of the statistical standards such that comprehension and usability of macroeconomic statistics has been improved.

21.115 Examples of changes in terminology affecting the names of the accounts within the SNA sequence of economic accounts are shown in table A4.1, while examples of changes in terminology affecting specific terms in the SNA are shown in table A4.2.

D. Cross-cutting issues

Chapter 22: Digitalisation

This is a common chapter with chapter 16 of *BPM7*, and for the most part, the text is identical in both the *2025 SNA* and *BPM7*.

A. Introduction

22.1 Falling costs and rising capabilities to process, transmit, and store digitized data have resulted in the extensive integration of digital technology into goods and services and the activities of production and consumption. This transformation of economic activity and daily life through the pervasive application of digital technology is referred to as digitalization. Digitalization has been enabled by information and communications technology (ICT) goods and services, including the internet, semiconductor chips, computing and electronic communication equipment, software, and wireless digital telecommunication services.

22.2 A wide variety of digital products and activities have appeared as part of digitalization, and digital assets (defined as assets that exist only in digital form such as crypto assets), data and software have assumed important roles as stores of wealth or inputs in production. The profound impact of digitalization on production, consumption, transacting, investment, prices, finance, and other aspects of the economy, as well as its impact on international trade in goods and services and other cross-border transactions, calls for enhanced visibility of digital activities, products, and transactions in the macroeconomic accounts. Guidelines are therefore needed on measuring the activities, products, and assets associated with digitalization in the conceptual framework of the SNA and on enhancing the visibility of digital activity and products in the macroeconomic accounts.

22.3 Measurement issues associated with digitalization, or that touch on digitalization, are also discussed in other chapters of the SNA and in other manuals. Chapter 11 on Capital account discusses the main types of non-financial assets that have enabled or resulted from digitalization, which include ICT equipment, software, data and databases, crypto assets without a corresponding liability, and digital elements of research and development. Chapter 10 on Financial account in the SNA discusses the classification of crypto assets with a corresponding liability and electronic money (e-money). Chapter 18 on Measuring prices, volumes and productivity discusses measurement challenges that affect products associated with digitalization, such as adjusting price comparisons for quality change. Finally, the *Handbook on measuring data in the System of National Accounts (forthcoming)* discusses the measurement of data as an asset, the *Handbook on measuring digital trade* discusses digital intermediation platforms and other aspects of trade affected by digitalization, and the *OECD Handbook on compiling digital supply and use tables* discusses tools to increase the visibility of digitalization in macroeconomic accounts.

22.4 To provide a consolidated view of measuring and reporting on key aspects of digitalization, and to cover additional aspects of digitalization, this chapter considers the main conceptual and measurement issues presented by the products, activities and assets, including related cross-border transactions, that have emerged as part of digitalization and recommends tools for increasing the visibility of digitalization in national accounts. The rest of this chapter is organized as follows. Section B introduces digital transactions, industries and products. Section C discusses digital platforms, including non-financial digital intermediation platforms along with free online platforms and other free products associated with digitalization. Section D discusses digitalization and the financial system, with subsections on new financial services and means of payment enabled by digitalization, financial digital platforms, and fungible digital assets, including crypto assets. Section E provides an overview of the issues and challenges presented by digital products for the measurement of prices and volumes and their solutions. Section F concludes the chapter with a section on analytical tools to increase the visibility of digitalization, including a thematic account based on the digital supply and use tables, and an extended account showing an alternative treatment of the consumption of free services of digital platforms.

B. Digital transactions, industries and products

Digital transactions

22.5 An analysis of digital transactions is a key part of understanding the current state and evolution of digitalization, as digital transactions enable many of the activities and products associated with the digital transformation. Digital transactions include both digitally ordered and digitally delivered transactions and encompasses both goods and services. Digitally ordered transactions are transactions ordered over a computer network by methods specifically designed for receiving or placing orders. Digitally delivered transactions are services that are delivered remotely over computer networks.

22.6 E-commerce transactions are equivalent to digitally ordered transactions. An e-commerce transaction is the sale or purchase of a good or service conducted over a computer network by methods specifically designed for the purpose of receiving or placing orders. E-commerce transactions can be ordered from a retail or wholesale trader, directly ordered from the producer or supplier of the good or service, or ordered via a digital intermediation platform. E-commerce margin services are supplied by retail and wholesale traders that receive orders digitally.

Digital industries

22.7 Digital industries include the producers of the goods and services that enable digitalization. For example, digital transactions are made possible by digital networks and complementary ICT products. Digital industries also include the industries enabled by digital networks. One such industry consists of e-tailers, which are retail and wholesale traders that receive most orders digitally. Other digital industries discussed below are digital intermediation platforms, platforms based on data collection and advertising, and financial service providers that predominantly operate digitally. In addition, the analysis of digital industries discussed as part of the digital supply and use tables includes a row for producers dependent on digital intermediation platforms and a row for other producers operating only digitally (i.e., whose products are all digitally ordered and digitally delivered).

Digital products

22.8 The remainder of this section defines the digital products that could be included in an analysis of the supply and use of digital products or of international trade in digital products. Some products that have emerged as part of digitalization raise measurement questions. The measurement of some specific digital products is covered in subsections.

22.9 Digital products either enable digitalization or are enabled by digital technology and infrastructure. The products enabling digitalization include ICT goods (both ICT equipment and components), software, data and databases, and telecommunication and network communication services. The products enabled by digitalization include services delivered over a computer network, such as cloud computing (which is also an enabler of many digital services), digital intermediation and other services of online platforms, audio and video streaming, online conferencing, online learning, and digital financial and payment services.

22.10 Digital products can be divided into ICT goods and digital services, with digital knowledge-capturing products such as computer programs, data and databases included in digital services unless sold on physical media such as a disk. The ICT goods are the goods included in the ICT products of the alternative structure for products of the information economy in the *Central Product Classification (CPC) version 2.1*. Digital services include the ICT products that are services – ICT services, digitally delivered content and media products such as online video games, and services of validating transactions in digital assets.

22.11 Digitalization has resulted in, and been accelerated by, the emergence of cloud computing as a new way of accessing ICT resources. It has also resulted in new types of assets. The conceptual and measurement issues raised by cloud computing, data assets, artificial intelligence (AI) systems, and non-fungible tokens as a type of digital asset are discussed in this section. Online platforms are discussed in section D and digital financial services and fungible digital assets are discussed in section E.

1. Cloud computing

22.12 Cloud computing technology has enabled a shift in the location where most computing occurs from the user's premises to remotely located data centres accessed over a network, sometimes referred to as "the cloud." Furthermore, the growing use of cloud computing services has caused large scale substitution of purchased ICT services for ownership of computing and communication equipment and software assets. Cloud computing services are used in the production or delivery of many of the digital services delivered over the internet, including artificial intelligence computing services. Cloud computing services are primarily used as an input into the production of other goods and services (i.e., for intermediate consumption).

22.13 Cloud computing services consist of computing, data storage, software, and related ICT services accessed remotely over a network, supplied on demand and with measured resource usage. Measured resource usage allows pay-per-use charging based on actual resources consumed, although charges are sometimes based on predetermined limits on the IT resources accessed (e.g., data storage). Measured resource usage also helps allocate resources efficiently because cloud computing technology takes advantage of resource pooling. Another characteristic of cloud computing technology is rapid elasticity, which means that users with fluctuating or fast-changing computing needs can scale their consumption up or down as circumstances warrant.

22.14 The main cloud computing products can be divided into three broad categories: (i) infrastructure-as-a-service (IaaS), which gives the user on-demand access to hardware such as a virtual server; (ii) platform-as-a-service (PaaS), which also includes access to a software platform; and (iii) software-as-a-service (SaaS), which includes access to the application software. Users of IaaS or PaaS provide their own software license, or software original. Function-as-a-service (FaaS) is a simplified type of PaaS that allows application functionalities to be executed in response to events. In addition, business-process-as-a-service (BPaaS) enables organizations to automate business processes using cloud computing software and platforms (i.e., SaaS and PaaS).

22.15 Cloud computing is part of a broader shift to remote computing that also includes the growth of co-location and hosting services. Remote datacentres can offer advantages such as physical infrastructure that supports large-scale computing, high network bandwidth and optimized connectivity, low cost, and security. To benefit from such advantages, IT users may lease space for their equipment in a colocation datacentre, or they may lease servers and other ICT equipment from a supplier of managed or unmanaged hosting services. IT users often consume a combination of the three types of remote computing services – for example, their co-located or hosted equipment may connect with a supplier of cloud computing services.

22.16 Cloud computing users with a long-term contract for dedicated access to a server in a cloud computing datacentre are considered to be economic owners of the server if the operating risk is borne by the user, making the contract a financial lease. Also, rather than paying per-use licensing fees to access a software product supplied by the cloud computing enterprise, cloud computing users may hold long-term license for a software product that they access in the cloud. If the term of the software license is more than a year, the license conceptually represents a software asset of the user, and one-year software licenses that automatically renew are also treated on the same lines, for practical reasons. Software subscriptions from software publishers that come with a long-term license are software assets, not intermediate consumption of software services (which is the case with licenses of less than one year). This follows the treatment of software licenses outlined in paragraph 11.99 to 11.101.

22.17 The fixed capital formation of cloud computing enterprises may include own-account production of software and equipment or equipment designs. For example, a large cloud computing enterprise may design equipment that meets its needs and outsource the physical production to a contract manufacturer. This enterprise's production of original equipment designs is measured by its cost and may be categorized as either own-account fixed capital formation in equipment or own-account fixed capital formation in research and development.

22.18 Data centre construction is also part of the fixed capital formation associated with cloud computing. Real estate enterprises that specialize in the construction and operation of data centre buildings often lease data centre buildings to cloud computing enterprises. If the cloud computing enterprise bears the operating risks and receives the economic benefits from using the relevant asset in the production of goods and services, the lease should be treated as a financial lease. The shift from purchasing software and hardware, which is

recorded as fixed capital formation, to consuming cloud computing services presents challenges for the analysis of the contribution of ICT capital to economic growth and total factor productivity (TFP) growth. To provide the detailed data on consumption of cloud computing and hosting services needed to understand the changes in how ICT resources are accessed and the general role of ICT in production may require adding product detail on cloud computing and related services to existing classifications. This could be done as part of the digital supply and use table or the digital economy thematic account discussed in section F.

22.19 Cloud computing and other remote computing services are often supplied across borders, and important suppliers of these services are multinational enterprises with domestic and foreign computing establishments connected by cross-border networks. The consumption of these services takes place in the location of the production process into which they are an input. For example, if a business in country A purchases computing services from a cloud computing establishment in country B, the computing services are to be recorded as an export of country B and an import of country A. The resource pooling aspect of cloud computing technology, which means that workloads can shift between servers or even establishments, can make it hard to know where the physical production of the computing services occurs. However, the payment flows on cloud computing should be more feasible to track. Also, ensuring that the estimates of exports and imports of cloud computing services are consistent with the value of net exports implied by the difference between the economy's production and consumption of cloud computing services may improve their accuracy. For an economy that is just an importer of cloud computing services (and not a producer of these services), this implies that the data on intermediate consumption of these services in the economy (assuming that the services are consumed by businesses) could provide a reliable estimate of imports.

22.20 Hosting and co-location services are exported when foreign-owned IT assets, such as servers and software, are hosted in a resident data centre. Similarly, these services are imported when locally owned ICT assets are hosted in a non-resident data centre. The (fixed capital formation in the) ICT assets should be recorded in the economy of their owner.

2. Data and databases

22.21 The emergence of data as an important type of intellectual property product is among the ways in which digitalization has transformed the economy. In the digitalized economy, many enterprises owe much of their value to their holdings and uses of data, and many products and production processes depend on data. These enterprises' data assets enable them to match suppliers, products or information to buyers' needs. In particular, e-tailers and online platforms use data to produce matching services, either of customers with the product that suits their needs, of users with each other, of producers with consumers, of advertisers with viewers, or of funders with borrowers. Moreover, producers of all types, including governments, use data for purposes such as developing and implementing product or program improvements, improving operational efficiency and customer experiences, planning, and marketing..

22.22 ***Data can be defined as information content that is produced by accessing and observing phenomena, and recording and storing information elements from these phenomena in a digital format, which provide an economic benefit when used in productive activities. Data as an asset is data used in production for more than one year.*** Data that does not provide a direct economic benefit to its owner, including ancillary data generated as a by-product of the producer's operations, is excluded from data assets.

22.23 Data is produced when information on observable phenomena such as facts, behaviours, and characteristics is recorded and stored in digital format. In the next step in the data information value chain, databases are created by structuring and organizing the data to enable efficient retrieval and analysis. Databases consist of files of data organized in such a way as to permit resource-effective access and analysis. They do not include the cost to obtain and produce the data or the cost of the database management system (DBMS) software. The cost of producing databases includes planning and implementing the structure and design of the database and preparing the data to facilitate its analysis.

22.24 In the last step of the data information value chain, the owner of the data derives economic benefits from the data by using them in production, for example by extracting insights and knowledge via the analysis of the data. (The owner of the data could also derive economic benefits by selling the data, in which case different steps of the data information value chain will be performed by different data owners.) Intellectual property

products, including software, research and development, and mineral exploration, may be created by producing and analysing data. If the data are used only once to develop an intellectual property product and will not be re-used, then the cost of acquiring the data is included in the value of the intellectual property product and not considered as a separate data asset.

22.25 Despite their conceptual difference, data and databases are difficult to measure separately because they are produced with similar inputs and because transaction prices generally reflect the combined value of the database and the data. For reporting purposes, data and databases are therefore combined into a single detailed intellectual property product called "data and databases". This detailed product is then combined with "computer software, including artificial intelligence systems" to form a higher-level class of intellectual property products. See paragraphs 11.97 to 11.104 for general guidelines on intellectual property products.

22.26 Most data assets are produced internally. The value of own-account production of data assets is measured by their cost of production. These costs include the expenses to develop a data production strategy, to collect and record the information elements of interest, and to gain access to information on the observable phenomena.

22.27 Data assets can also be acquired via purchases. Purchasing data may represent either fixed capital formation or intermediate consumption of data services depending on the duration of the use of the data in production and the limitations on the purchaser's use of the data. The sale of the data original, which would include rights to sell copies of the data or licenses to use the data and all other ownership rights, transfers the ownership of the data asset to the purchaser. Copies of long-lived data with general rights to use the data in production for more than a year are also recorded as fixed assets of the purchaser. However, the right to use a purchased copy of the data for less than a year is a service analogous to an operating lease, and to be recorded as intermediate consumption. The sale of information derived from data, which must be distinguished from a sale of the data, is also to be recorded as a service.

22.28 Digital platforms usually collect data on their users. If the subjects of the data collection receive payments for access to the collection of data on their observable phenomena, those payments are part of the cost of producing the data asset. However, payments for authorization to collect data on users' observable phenomena are classified as earned income rather than as a service and hence included as rent. Agreeing to collection of one's data (such as when visiting a free online platform after accepting the license agreement) does not fall within the definition of production and is therefore not a service. (Platform users who receive payments for undertaking specific actions to assist the collection and recording of data on their observable phenomena do supply a service, but such cases are likely to be too rare in practice to be worth distinguishing.)

22.29 Payments for access to data collection on an individual's observable phenomena are classified as rent, because being the subject of the data collection is not to be considered equivalent to supplying a service.

22.30 The asset boundary for fixed assets applied in the integrated framework of the SNA includes produced assets used in production for more than a year, so data that will be used in production for more than a year is conceptually a fixed asset. However, many types of data (including behavioural data used for targeted advertising) tend to have a relatively short service life. The value of the goods and services produced with inputs of shorter-lived data conceptually includes the value of that data. When feasible, the cost of production of data whose service life is clearly short (e.g., data that is stored for only a short time) should be treated as intermediate consumption rather than fixed capital formation.

22.31 An enterprise's own-account production of data may include both data with a service life shorter than a year and data with a service life longer than a year. In these cases, the information needed to separately identify the costs of producing the short-lived data and the costs of producing the long-lived data is often unavailable. When the costs of producing the short-lived data cannot be separately distinguished, a relatively short average service life that reflects the inclusion of the data with a service life shorter than a year may be used to estimate the value of the combined stock of data assets. Although including expenses that do not create economic benefits in future years in the estimate of fixed capital formation has the disadvantage of causing producers' gross value added to be overstated, this disadvantage is outweighed by the advantage of capturing the potentially important value of the stocks of data whose useful economic life is a year or less as part of the measure of the stocks of the data assets. Service lives for data of under a year are common, so if the measure of the production of data does not exclude all the data with a service life of a year or less, a relatively short assumption for the service life of data assets is likely to be appropriate.

22.32 Expenditures to update or add to an existing own-account data asset are also capitalized. Suppliers of software and connected equipment with embedded software or AI systems often collect data on users to update or add to their data assets. Expenses to collect users' data for these purposes are part of investment in data assets.

3. Artificial intelligence

22.33 ***Artificial intelligence (AN11531ow1) refers to capabilities of a computer program, or system controlled by a computer program, of recognition, reasoning, communication, and prediction emulating human recognition, reasoning, and communication.*** Machine learning, in which data enables an artificial intelligence software program to learn to predict or classify from experience, is often used to develop or improve artificial intelligence programs, and artificial intelligence systems rely on a combination of software and data to generate their output. Furthermore, deep learning (a type of machine learning) enables some artificial intelligence programs to improve from experience while being used in production, whereas generative artificial intelligence creates new content. Although they perform tasks that normally require human intelligence, artificial intelligence programs often use data beyond a scale that humans could analyse.

22.34 Many of the innovative products and product capabilities associated with digitalization are made possible by artificial intelligence technologies. Among these are text mining, computer vision/image recognition, speech recognition, natural language processing, personalized recommendations, and generating content such as summaries of documents, images and software codes using generative artificial intelligence. Applications of artificial intelligence include translation, predictive modelling, risk assessment by lenders and insurers, data analytics, writing summaries of the content of large textual data sets, smart robots, autonomous drones and vehicles, face recognition, fraud detection, and cybersecurity. Artificial intelligence has greatly expanded the types of jobs or job elements potentially subject to automation.

22.35 To aid in the analysis of the use of artificial intelligence and its transformative impact on labour markets and production, artificial intelligence systems should be distinguished as a special type of software within a class of intellectual property products identified as "computer software, including artificial intelligence systems", with the separate reporting of artificial intelligence encouraged as an "of which" item. Artificial intelligence is also specifically mentioned in the name of this product group. Artificial intelligence is classified as a special type of software even though artificial intelligence systems frequently include data and hardware elements, because the system is controlled by software even when these elements are present. However, the equipment that contains an embedded artificial intelligence system (or other embedded software) is still classified as equipment.

22.36 The general guidance for software, data and databases in chapter 11 on Capital account also apply to artificial intelligence software, but artificial intelligence uses data and machine learning in ways that present some special issues. Data plays a critical role in training artificial intelligence software, and data is often acquired and organized in a database for the specific purpose of training an artificial intelligence software program. In addition, artificial intelligence programs often use data to generate their output. The value of the data used to train an artificial intelligence software product or to help artificial intelligence software to generate its output should be recorded separately from the value of artificial intelligence software, as the data could have multiple uses. However, data assembled in a database solely as a step in the production of an artificial intelligence computer program and that cannot be re-used may be included in the costs of producing artificial intelligence programs, if the sum of costs method is used to value the relevant assets.

22.37 The performance of an artificial intelligence software program with learning capabilities may improve as the program is used. Fixed capital formation is not recorded in connection with learning from experience by artificial intelligence software for pragmatic reasons, as the associated cost is likely to be small. However, the depreciation rate of the artificial intelligence software asset may be adjusted. Learning from experience can costlessly extend the service life of an artificial intelligence program, making it appropriate to assume a long life for the asset. (Learning from experience by artificial intelligence software is not the only source of improvements in the performance of software that is already being used: many software products receive automatic updates delivered over the internet.)

4. Non-fungible tokens (NFTs)

22.38 ***Non-fungible tokens (NFTs) are digital records hosted on a blockchain that are associated with a digital or physical asset or product but that are distinct from that asset or product.*** NFTs certify rights to use and benefit from the asset and may also serve to certify the asset's authenticity. They are non-fungible because the associated asset is unique and not interchangeable with other assets in the same class the way that the units of a fungible crypto assets are. Payments for NFTs usually must be made in the fungible crypto asset native to the blockchain on which the NFT is hosted; see paragraph 22.85 for the description of fungible crypto assets.

22.39 NFTs are classified into three classes: (i) those that convey no ownership rights and only allow for personal use of a specified asset or product; (ii) those that convey limited ownership rights, beyond personal use for a specified asset or product; and (iii) those that convey full ownership rights for a specified asset or product. The main classification of NFTs is based on the type of rights conveyed rather than on the characteristics of the associated asset or good. The purchase of an NFT could, based on these rights, be classified as consumption, as an acquisition of a non-produced asset, or as neither (assuming that the purchase of the associated asset has already been recorded). However, NFTs vary widely both in the ownership rights they convey and in the type of digital and physical asset or good to which they are linked.

22.40 NFTs that convey no ownership rights and only allow for personal use of a specified asset or commodity (e.g., the right to display a video clip of a scoring play in a sporting event or of a piece of digital art for non-commercial purposes) are in the first category. The purchase of an NFT that only gives rights to personal use of an item is treated as consumption. This type of NFT is not an investment item because it cannot be used in production and generally does not serve as a store of value. However, in rare cases, an NFT in this category that commands a high price when first auctioned and that has enough exclusivity and appeal to have a lasting value may qualify as a valuable. Treating the initial purchase of NFTs in this class as a consumption expenditure implies that their creation represents production. In the case of cross-border transactions in this type of NFT, such services are recorded under relevant category depending on the content of the related asset.

22.41 The second type of NFT conveys limited ownership rights to a specified asset or commodity that go beyond personal use to include use for commercial purposes. NFTs that convey limited ownership rights are included in the asset class "contracts, leases and licenses", if they confer economic benefits that the holder can realize in practice. Assets in this class are non-produced non-financial assets. The ownership rights conveyed to the NFT holder may affect the value of the encumbered asset. Further information on contracts, leases and licenses is provided in chapter 11 on Capital account and chapter 27 on Contracts, leases, licenses and permits.

22.42 The third type of NFT conveys full ownership rights. NFTs that convey full ownership are a method of recording and verifying ownership of an underlying asset. The underlying asset should already be recorded in the integrated framework of national accounts. An NFT that conveys full ownership is a digital recording of ownership similar to a property title, not a separate asset. Purchasing an NFT in this category is therefore a way of purchasing the underlying asset.

C. Digital platforms

22.43 Platforms help users to connect with and interact with other users. Platforms are therefore subject to network effects. (Network effects occur when the value of a platform or product to each user increases as the number of users of the platform or product rises.) The opportunities for beneficial interactions with other platform users increase with the number of users in general or the number of users on the other side of the platform, so adding users makes the platform's services more valuable. For example, increasing the number of sellers on a platform makes it more attractive to buyers and increasing the number of buyers makes it more attractive to sellers; similarly, increasing the audience size raises the prices that advertisers are willing to pay.

22.44 Digital platforms – also known as online platforms – supply a digital service that facilitates interactions between two or more distinct but interdependent sets of users, who interact through the service via the internet. Digital (or online) platforms differ from suppliers of e-commerce margin services (or e-tailers) because they do not take possession of the goods sold on the platform. They also differ from producers that

sell their own products directly to the ultimate customer via digital ordering and/or digital delivery, because they intermediate, rather than produce, the goods and services sold on the platform. However, online platforms and e-tailers both use data to produce matching services, either of customers with the product that suits their needs, of producers with consumers, of advertisers with viewers, or of funders with borrowers. To take advantage of the synergies in technology, an enterprise might combine selling its own merchandise via digital ordering (i.e., e-tailing) and operating a digital platform that facilitate selling by others.

22.45 Digital intermediation services facilitate transactions between multiple buyers and multiple sellers in exchange for a fee, without the unit providing the intermediation services taking economic ownership of the goods or rendering the service being intermediated. These services match producers and consumers with each other and facilitate their transactions.

22.46 Some digital platforms are free, while other fee-based platforms facilitate financial transactions or interactions that do not involve a transaction. There are therefore four types of digital platforms:

a. *Non-financial digital intermediation platforms* facilitate transactions between multiple buyers and multiple sellers for the ordering and delivery of goods, non-produced non-financial assets and services for a fee or commission without taking ownership of the goods or non-produced non-financial assets or rendering the services, that are being sold (intermediated).

b. *Free online platforms* facilitate non-commercial interactions between users or provide entertainment and information services and are usually funded by advertising and the collection of data on their users.

c. *Financial digital platforms* intermediate funding or payment transactions for a fee. Financial digital platforms are discussed in section D.

d. *Other fee-based digital platforms* facilitate interactions between users other than transactions in goods, non-produced non-financial assets and services or financial transactions. Online dating and matrimonial platforms are examples.

1. Non-financial digital intermediation platforms

22.47 In addition to helping buyers and sellers of goods, non-produced non-financial assets and services to find each other, non-financial digital intermediation platforms facilitate ordering, payment for, and delivery of, goods, non-produced non-financial assets and services supplied by institutional units on the seller side of the platform to institutional units on the buyer side of the platform. Digital intermediation platforms charge fees for these digital intermediation services. To increase parties' willingness to transact, they may also provide quality assurance through steps such as vetting the parties that have access to the platform.

22.48 The output of a digital intermediation platform consists of digital intermediation services, which may be charged via an explicit or an implicit fee. It does not include the goods, non-produced non-financial assets and services that the digital intermediation platform helps others to sell. The possible consumption of the platform's services by the users on the two sides of the platform is shown on the sides of the triangle in figure 22.1. The seller/producer and the buyer/consumer both consume intermediation services in the case where they are separately invoiced for the services supplied by the platform. In the case where all fees for the platform's services are invoiced to the seller/producer, only the seller/producer is recorded as consuming the intermediation services, and similarly, only the buyer is recorded as consuming the intermediation services in the case where all fees for the platform's services are invoiced to the buyer. However, in all cases, the buyer using the digital intermediation platform acquires the goods, non-produced non-financial assets or services supplied by the seller/producer using the digital intermediation platform, as shown at the base of the triangle.

22.49 Non-financial digital intermediation platforms often accept buyers' payments for the goods, non-produced non-financial assets and services produced or sold by platform users and pass through the amount to the producer/seller after deducting their intermediation service fee. To capture the economic substance of the transactions in which the platform passes on the payment for the good, non-produced non-financial asset or service after deducing its fee or commission, these payment flows must be rerouted to include a sale of good, non-produced non-financial asset or service by the producer/seller using the platform to the buyer using the

platform and a purchase by the producer/seller of the intermediation services supplied by the platform. The approach to recording the transactions of a digital intermediation platform in which the producer of the intermediated good, non-produced non-financial asset or service consumes the platform's intermediation services is known as the producer approach. The transactions recorded after any necessary rerouting to implement the producer approach are those shown on the left side and at the base of figure 22.1.

Figure 22.1: The possible types of transactions of a digital intermediation platform

Source: *Handbook on Measuring Digital Trade,* 2nd edition..

22.50 Handling the case when the platform's fee is implicitly included in the price of the intermediated product by recording transactions in which the buyer purchases the product directly from its producer/seller and the producer/seller purchases intermediation services from the platform has some important advantages. This approach allows the supplying of the goods, non-produced non-financial assets and services sold on digital intermediation platforms to be recorded in the appropriate industry and the consumption of those goods, non-produced non-financial assets and services to be recorded in the appropriate class of products. It also accounts for the effect of the intermediate consumption of the services of the digital intermediation platform on the producer's value added. (A complete portrayal of the services of digital intermediation platforms and the value of the products ordered through digital intermediation platforms may be provided in a thematic account on the digital economy or a digital supply and use table.)

22.51 The buyer is recorded as purchasing intermediation services from the digital intermediation platform in cases when the platform separately invoices the buyer for its services. However, in these cases the buyer's payment for the good or services must still be rerouted to record a purchase of the good, non-produced non-financial asset or service from its producer/seller, and, if a fee is deducted from the amount passed through to the producer/seller, a purchase of intermediation services by the producer/seller. In addition, some digital intermediation platforms seek to attract buyers to the platform by using a portion of the fees received from sellers to pay rebates to buyers. The rebates represent a reduction in the price of the goods, non-produced non-financial assets and services supplied by the seller and are thus not part of the fee (or price) that the platform retains for its intermediation services. The price received by the seller must therefore be measured by the net price after the rebate, and the fee recorded as received by the platform for its services must exclude

the amount that funds the rebates. The rebate payment must therefore re-routed to show that it is paid by the platform to the seller and then paid by the seller to the buyer, with each rebate representing a reduction in the price received by its payer.

22.52 Digital intermediation services are frequently supplied across international borders by non-resident platforms. Goods, non-produced non-financial assets and services supplied by resident producers to resident buyers via transactions intermediated by a non-resident platform should be recorded as produced and consumed in the compiling economy. Further, the fee or commission received by the digital intermediation platform should be recorded as an import of digital intermediation services of the compiling economy. Therefore, if the non-resident platform deducts its fee from the buyer's payment for the good, non-produced non-financial asset or service, the buyer's payment must be rerouted so that the producer/seller is recorded as selling the good or service to the buyer and importing the digital intermediation service. Similarly, in the case of a resident DIP collecting a cross-border payment on behalf of a non-resident producer/seller providing a good, non-produced non-financial asset or service to a non-resident buyer and deducting its fee from that payment, the buyer's payment is rerouted to go to the producer/seller and an export of the services of the platform to the economy of the seller/producer is recorded.

22.53 Digital intermediation platforms can also facilitate exports by resident suppliers of goods or services, or imports from non-resident suppliers of goods or services. Digital intermediation services used by an exporter should be included in the value of the exported good or service. For example, if a digital intermediation platform located in country A facilitates the supply of a service by a resident of country B to a resident of country C, the price paid by the buyer in country C is the value of service exported by country B and imported by country C. The fee or commission charged by the platform is then the value of digital intermediation services exported from country A and imported by country B. Domestically produced digital intermediation services used by the producer of an imported good or service should conceptually be treated as an export of services and the value of the imported good or service should be measured by the price paid by its buyer. However, this treatment may require rerouting the fee or commission paid to the digital intermediation platform to pass through the non-resident producer. If the source data to compile these rerouted flows are unavailable, assumptions (or international cooperation) may be needed to impute the rerouted flows.

22.54 Services sold for a fee or commission are usually straightforward to measure, but measuring the intermediation services of digital intermediation platforms and the goods, non-produced non-financial assets and services transactions that they intermediate can present compilation challenges. Rerouting the payments collected and fees retained by a digital intermediation platform may require data that are unavailable, making assumptions necessary.

22.55 Furthermore, by allowing producers to interact with previously unreachable consumers, including those in other geographical locations, digital intermediation platforms have provided selling opportunities to producers previously excluded from the market. Selling opportunities created by digital intermediation platforms have led to growing activity by informal household enterprises, which are likely to be missing from business registers and other standard sources of statistical information. They have also contributed to the rapid growth of small international transactions in goods and services that may be below the minimum thresholds for customs duties and documentation requirements. Another common compilation challenge from digital intermediation platforms providing cross-border intermediation services is that source data on digital intermediation platforms with no local presence is not easily available.

2. Free online platforms and free digital products

22.56 Digitalization has been marked by a broad-based expansion in the availability of free products, in many cases provided by online platforms. The integrated framework of the SNA values the free outputs of non-market producers such as government units and non-profit institutions by the costs of production. However, this does not apply to most of these free digital products because they are supplied by a commercial enterprise. The outputs of commercial enterprises are valued by their price, which is zero in the case of a free product. The emergence of free online platforms and products as part of digitalization has therefore raised questions about whether the output of the digital economy is fully captured in GDP.

22.57 Free products supplied by market producers are included in GDP as part of the price of other products they

help sell or with which they are bundled either directly or indirectly. Taken together, the items in the bundle generate at least enough revenue to cover the operating costs of the supplier of the free product, so the overall output of the supplier of the free digital product is not undermeasured. Free products are supplied by both platform-type of enterprises and by non-platform enterprises.

Free products supplied by non-platform enterprises

22.58 In the case of non-platform enterprises, the free output and the priced output are marketed to the same set of customers, and the function of the free output is to promote sales of the priced output to those customers. Suppliers of digital products frequently adopt a "freemium" pricing strategy, in which a free basic version of the product promotes sales of upgrades or a premium version of the product. In these cases, the price of the promoted output includes a mark-up that covers the cost of supplying the free output that has facilitated its sale.

22.59 Rather than being free, the promotional output may have a low price that is subsidized by the fully priced product. For example, a low-priced basic version of a software product may require the purchase of an upgrade or a complementary software product to unlock desirable features or capabilities.

22.60 Although a zero or artificially low price of an output that is cross-subsidized by the price of another output of that same producer does not cause undermeasurement of the producer's total output, it does affect the measurement of the composition of the producer's output. The relative values ascribed to the items in the bundle can matter for the measurement of fixed capital formation if a free or cross-subsidized item used for fixed capital formation is bundled with items used for intermediate consumption, such as the supplies needed to operate a piece of equipment, or the training, maintenance and helpdesk services needed to use a free software product. Also, the relative values assigned to the various parts of the bundle could affect the measurement of exports, imports, or trade patterns if a multinational enterprise sources parts of the bundle from different countries. Finally, the effect of these relative values on the weights of the price and volume indexes could matter for the measurement of the volume growth of GDP if the prices of the items in the bundle behave differently.

Free online platforms

22.61 Most free online platforms are organized as commercial enterprises. Two-sided (or multi-sided) commercial platforms often charge a price for their services to the users on one side of the platform and supply free services to the users on the other side of the platform to attract and retain those users. The platform users attracted by free services increase the value of the platform's services to the users on the priced side of the platform. The users who fund the platform by purchasing priced services recoup this expense as part of the transactions with the users on the free side of the platform enabled by the platform's services.

22.62 Free online platforms offer services such as social media, search, and access to content providing entertainment and information. Commercial free online platforms are generally funded by advertising and the collection of data on their users, while offline free radio and television broadcasters are funded just by advertising. The data is used as input in the platforms' production of advertising services. However, the data, or information derived from the data, may also be sold or used for own-account production of software and research and development.

22.63 Platforms funded by advertising services frequently assemble the audience that the advertisers want to reach by supplying free services. They then include the cost of supplying the free services needed to assemble the audience in the price charged to advertisers. The advertisers, in turn, include the cost of the platform's advertising services in the price of the product sold with the help of the advertising. Both the platform and the firms that advertise on the platform receive at least enough income from the prices at which their output is sold to cover their operating costs. The standard method of measuring the value of a market producer's output by the producer's sales is therefore applicable to both the platform and the funder side users of the platform. Furthermore, households' expenditures on the products advertised on the platform include the cost of the platform's services embedded in the price of the advertised products.

22.64 Digital platforms collect and store data on users to produce data assets as a type of own-account fixed capital

formation, and they may also license others to use the data or even sell the data. The value of own-account fixed capital formation in data assets is usually measured by the costs of production. However, the platforms may also compile short-lived data on recent browsing behaviour that is used as an input for targeted advertising. The value of this short-lived data is part of the price of the advertisement targeting services. More generally, short-lived user data collected by digital platforms can be assumed to be used immediately for the production of services, with its value embedded in the price of the products it helps produce.

22.65 A few free online platforms (such as public wikis created and maintained by communities of volunteers) are owned by a non-profit institution serving households and operate as non-market producers, meaning that their output is not sold for an economically significant price. As noted before, the output of non-market producers is valued by the costs of production. Nevertheless, the production costs of non-profit free platforms may be modest in comparison with physical indicators of its output such as number of visits or scale of content it hosts, because volunteers may do much of the work. The work of volunteers in producing services is outside the production boundary of the integrated framework of the SNA, but could be included in an extended account on unpaid household service work; see chapter 34 on Measuring the sustainability of well-being for more information.

Content created by platform users

22.66 Many users of free platforms create content such as videos, images, text, and audio, both as a leisure activity and for commercial purposes such as receiving advertising revenue. Creating content for leisure purposes is outside the production boundary applied in the integrated framework of the SNA. If the content creator does not receive remuneration, the content is assumed to be created for leisure purposes. Households that receive monetary remuneration from an advertiser or platform for use of their uploaded content may be considered unincorporated household enterprises supplying services to the advertiser or platform. In the case of a platform that takes its fees for services out of the payments from advertisers that are passed through to the content creators, the content creators should be treated as the purchasers of the platform's services, which are used as intermediate consumption for the production of advertising services provided to the advertisers. If the advertiser is a non-resident, the service should be included in exports of services.

22.67 Depending on the context, user-generated content can refer either to content created by the users of a brand's products (customers and brand advocates), or to content created by the users of an online platform. The economic benefits that free platforms receive from platform user-generated content include attracting users to the platform, selling advertising, and adding to the platform's stock of data assets. These economic benefits are a positive externality of the sort that frequently arises from producers' interactions with their customers and are not a basis for inferring that the creator of the unpaid user-generated content has produced a service used by the platform. However, the cost of supplying free services to the platform users who create content may be included in the platform's own-account fixed capital formation in data assets. Furthermore, an extended account with an alternative approach to the measurement of households' consumption of services provided by free platforms can optionally treat user-generated content as a service produced with inputs of the platform's free services and used by the platform as an input in its own-account production of data assets; see section F of this chapter for more details.

22.68 In addition to posting content on free platforms that receive advertising revenue, content creators may publish on digital platforms that collect subscription fees on their behalf in return for a share of the fees. Although most of this content is likely to have a short economic life, content created for commercial purposes that yields economic benefits for the content creator over more than a year is an intellectual property product of the creator classified as long-lived entertainment, literary and artistic originals.

Free software

22.69 Software products are often free to download, although the services of the platform hosting the software code may not be free. The free software may be used by households for final consumption, or it may be used in production. Copies of free software are frequently supplied across borders. In addition, free code shared by software developers on code hosting platforms that facilitate collaboration plays an important role in software

development.

22.70 App stores are a type of digital intermediation platform on which some of the software items available for households to download to their phone or other device are often free. Free and subsidized apps used by households may be funded by advertising and collection of data, by sales of premium versions or other items that they encourage, or by other services whose use they facilitate. Like the services of an online platform funded by advertising, the services of apps funded by advertising are purchased indirectly as part of the price of the advertised product.

22.71 Open-source software refers to free software whose source code is publicly available under a license to copy, use, inspect, modify, and share. Open-source software is used in production by corporations, governments, and non-profit institutions serving households. It is usually developed, maintained and supplied by a corporation, university, government unit, or non-profit institution serving households whose investment to develop the open-source software original would be included in a general estimate of own-account production of software assets based on costs of production, such as the remuneration for software developers.

22.72 A complex open-source software product may contain components developed in multiple economies, as the development of complex software products is often spread across multiple locations. Depending on the circumstances, it may be appropriate to allocate the investment to develop the open-source software product among the economies in which the development work takes place, or it may be appropriate to attribute the entire capital formation to the economy of residence of the owner of the software asset. In the case of software produced by a multinational enterprise, the headquarters or one of the foreign affiliates may acquire full ownership of the software original by funding the software's development.

22.73 Even though open-source software does not generate licensing fee income for its developer, it can qualify as an asset of its developer. The producer of an asset is the economic owner if the producer bears the risks of production in order to claim the economic benefits associated with the use of the asset. Open-source software developed by corporations is usually funded through sales of complementary services, such as training and support, or by other products it helps sell. Open-source and other free software may also help increase the number of users on a platform or enhance the developer's reputation and profile. Open-source software supplied across borders may be funded by cross-border sales of complementary services or other products.

22.74 Open-source software is sometimes developed by individuals working independently. Unpaid production of open-source software originals by volunteers is outside the production boundary applied in the integrated framework of the SNA. However, independent developers of open-source software for commercial purposes are unincorporated household enterprises investing in the own-account production of software.

22.75 The value of open-source software copies supplied by enterprises may be embedded in the price of complementary outputs that the open-source software helps sell or that are bundled with the open-source software. If software users substitute open-source software funded by mark-ups on intermediate consumption items for explicit purchases of software, the standard procedures will still correctly measure the total output of the supplier of the free software but the breakdown of the uses of that output will omit the use for capital formation in software assets. Measured fixed capital formation in software will also be reduced if software users replace explicit purchases of software with open-source software distributed by a government unit or a non-profit institution serving households operating as a non-market producer.

Increasing the visibility of free online platforms and products

22.76 The value of the free services that digital intermediation platform funded by advertising or data supply to households is relevant for analytical purposes and for understanding the broader impact on household final consumption of the emergence of these free platforms. Alternative measures of household final consumption expenditures and the output of free online platforms that include the households' direct consumption of the (free) services provided by platforms may be presented in an extended account on free online platforms, as discussed in Section F below.

22.77 The effect of free platforms and free digital products on volume growth of household consumption is also conceptually relevant for understanding the impact of digitalization on prices and volumes. Free digital products and the measurement of prices and volumes are discussed in section E.

D. Digitalization and the financial system

1. New financial services and means of payment enabled by digitalization

22.78 Digitalization has resulted in the appearance of new financial service products and of new digital assets designed to be used as a means of payment or act as a store of value. Means of payment refers to the instrument used to make the payment, such as a check, debit or credit card or one of a wide variety of new electronically transferable digital financial instruments. The new digital financial service products fall within existing categories of products, and the new digital assets fall within existing asset categories. However, they should be reported as "of which" items (or as part of the product detail in a thematic account on the digital economy and the associated digital supply and use tables) when they are important and can be separately identified.

22.79 It will usually be appropriate to provide a breakout of "financial service providers predominantly operating digitally", which will contain the providers of financial services that primarily transact with consumers via digital channels as part of the digital supply and use tables or thematic account on the digital economy discussed below. "Financial service providers predominantly operating digitally" include financial digital platforms, digital providers of insurance and reinsurance services (InsurTech), digital banking platforms operating solely online (neobanks) or predominantly online, e-money issuers, and online only foreign exchange bureaus and money transfer operators. Some important digital payment mechanisms are e-money (which includes mobile money), digital assets that are used as a means of payment including fungible crypto assets, and central bank digital currencies (CBDCs).

2. Financial digital platforms

22.80 Financial digital platforms provide matching services and facilitate financial transactions between suppliers of funds and users of funds. They do not take ownership of the financial assets arising from claims on the users of funds or incur liabilities to the suppliers of funds. They receive fees or commissions for their services and are classified as financial auxiliaries. They differ from conventional financial intermediaries, which incur liabilities and acquire financial assets on their own account, and which charge for their financial intermediation services implicitly through interest rate margins.

22.81 There are four types of financial digital platforms that which facilitate access to funding in exchange for a fee or commission: (i) peer-to-peer and other online lending platforms, (ii) equity-based crowdfunding platforms, (iii) philanthropic (or donation-based) crowdfunding platforms, and (iv) reward-based crowdfunding, in which the donors to a project expect to receive a non-financial reward such as a good or service. Peer-to-peer lending platforms facilitate loans between households or from households to small enterprises. Other lending platforms match households and small enterprises seeking funding to institutional investors seeking lending opportunities. Equity-based crowdfunding platforms facilitate financing transactions in which the funders receive equity stakes in the enterprises or projects they fund. The donation and gift transactions mediated by philanthropic crowdfunding platforms are current transfers or, potentially, capital transfers, and an element of the services these platforms perform is vetting of causes that are seeking assistance. The funds advanced to project owners on reward-based platforms do not qualify as loans, as the project owner's obligation to supply the reward is contingent on the successful completion of the project. Rather, they should be treated as other accounts receivable/payable, which are extinguished when the project is completed with the receipt of the reward. If a project fails, the account receivable/payable is written off as an other change in volume.

22.82 A type of financial digital platform whose main purpose is not to facilitate access to funding consists of crypto asset exchanges and trading/lending platforms. Crypto asset exchanges and trading/lending platforms allow users to buy, sell and lend crypto assets for a fee or commission. They embed their fees into their buying and selling prices. Fees received from staking of crypto assets are treated as payments for the provision of non-financial services (recorded as computer services in balance of payments current account. Some crypto exchanges may provide custodian services and hold crypto assets of customers for a fee. Crypto assets with a corresponding liability (e.g., asset-backed stablecoins, debt, and equity security crypto assets) are classified as financial assets (see paragraph 22.87). See paragraph 5.169 for specific guidance on the classification of crypto exchanges and trading/lending platforms.

3. Digital representations of value

22.83 Digital assets designed to act as a medium of exchange or as a financial instrument are digital representations of value recorded on a cryptographically secured distributed ledger or using a similar technology or issued by a central bank as a CBDC. Medium of exchange is defined as a means for acquiring goods, services, non-financial assets or financial assets, without resorting to barter. Digital assets differ from e-money. E-money is monetary value stored electronically on a physical device such as card or phone or stored remotely, and represents a liability of the e-money issuer denominated in a fiat currency. E-money must represent general purchasing power (i.e., it can be used for making payments to a variety of other items).

22.84 Crypto assets are digital representations of value that use cryptography and distributed ledger technology (DLT) such as blockchains to enable parties to transact directly with each other without the need for a trusted intermediary. DLTs allow transactions to be recorded, synchronized, and shared simultaneously on multiple nodes in a decentralized network. Blockchains create cryptographic records of transactions and ownership that are impossible to alter without detection.

22.85 Crypto assets are classified as either fungible or non-fungible. Fungible crypto assets are divisible and not unique (e.g., one bitcoin is equal to any other bitcoin and can be divided into equal pieces of similar value). Conversely, non-fungible crypto assets, commonly known as non-fungible tokens (NFTs), are unique and non-divisible (see paragraphs 22.38 to 22.42). Fungible crypto assets are classified into three broad categories: (i) those designed to act as a general medium of exchange (which are further divided in those with, and those without, a corresponding liability); (ii) those designed to act as a medium of exchange within a platform or network—also known as payment tokens (again divided into those with, and those without, a corresponding liability); and (iii) security crypto assets. Security crypto assets represent a debt or equity claim on the issuer. They are similar to traditional securities but are exchanged peer-to-peer using cryptography. They are also referred to as security, asset or investment tokens. They always have a corresponding liability and should be recorded as debt securities, equity securities, or financial derivatives depending on the nature of the claim on the issuer. Utility tokens that provide the holders future access to goods and services should be classified as debt securities. .

22.86 A decision tree to aid in identifying fungible crypto assets according to the above typology and other digital assets that have a corresponding liability is presented in figure 22.2. Digital assets with a corresponding liability include CBDCs, security crypto assets, payment tokens with a corresponding liability, and most stablecoins. These payment tokens are negotiable instruments serving as evidence of debt and should be recorded as a separate subcategory under debt securities. Stablecoins aim to maintain a stable value relative to a specified asset such as a fiat currency or gold, or a specified basket of assets, usually by being backed (or, at least, advertised as backed) by the assets of the issuer. The stability mechanism might also be an algorithm that causes the supply of the asset to respond automatically to changes in demand for the asset.

22.87 All types of fungible crypto assets are within the asset boundary as defined in the integrated framework of the SNA. Crypto assets with a corresponding liability are classified as financial assets. In particular, crypto assets with a corresponding liability designed to act as a general medium of exchange are separately identified under "currency and deposits". On the other hand, crypto assets without a corresponding liability are classified as non-produced non-financial assets within a separate category. If a crypto asset without a corresponding liability is ever able to gain widespread acceptance as a general medium of exchange, the guidance on its classification may be re-considered; see the research agenda in annex 5. Chapter 11 on Capital account, chapter 12 on Financial account and chapter 14 on Balance sheet provide additional details.

22.88 Validating crypto asset transactions is to be treated as production of services. The process of validating transactions in crypto assets is known as mining in the case of crypto assets without a corresponding liability that rely on proof of work for ensuring the security of transactions. This process includes the release of new units of the crypto asset as an implicit fee paid to the miner validating the transaction. The miner validating the transaction also receives an explicit fee in crypto assets paid by the party initiating the transaction, which is normally the sender/seller. The validation services that are rewarded with newly released units of the crypto asset are assumed to be collectively consumed by the existing holders of units of that crypto asset, while those rewarded by the explicit fee are consumed by the transactor paying the fee (normally the sender/seller). See paragraphs 7.228 to 7.233 for details on the recording of output of mining and validation services.

Figure 22.2: Decision tree for classifying fungible digital assets

E. Measuring prices and volumes of products affected by digitalization

22.89 Many of the measurement challenges arising from digitalization involve prices and volumes rather than the output at current prices. Price and volume measurement challenges are particularly common for products affected by digitalization because price change is straightforward to measure only when the products and their characteristics remain static. Digitalization has transformed household final consumption and gross fixed capital formation of enterprises, and caused rapid changes in products' characteristics and sources of supply. New digital products regularly disrupt existing ones, new models or service contracts frequently embody quality improvements, digital intellectual property products and services with no physical units of measurement are growing in importance, and free products often appear or cease to be free.

22.90 Regular and timely refreshment of the samples of models (and outlets) used to calculate the price indexes for products subject to frequent quality improvements to keep them representative of current use patterns is the first step in compiling deflators that capture these products' quality change. Secondly, the appearance of new models and the exit of obsolete models must be handled in a way that allows the price index for the product to reflect the value of the quality changes.

22.91 The commonly used "matched models" procedure for handling entry of new models and exit of old ones when constructing the price index for a product considers only the price changes of the continuing models in calculating the change in the index. Models not present in both periods are excluded from the subsample used to calculate the change in the index. Leaving these models out of the index calculation has the advantage of avoiding the risk of counting price differences caused by quality differences as price changes caused by the passage of time. However, the method implicitly assumes that the quality-adjusted price of the new model equals the price of the model it is replacing (after adjusting for the general change in price of the product since the last period in which the exiting model's price was observed). Newly introduced models of products benefiting from advances in digital technology often offer substantially improved quality at about the same price as the model they replaced.

22.92 To capture the price and volume impact of quality changes in digital products, the prices of new models must

be adjusted for the value of their quality difference from the models they replace. Hedonic regression models relating the price to the product's characteristics are an alternative and recommended method for adjusting prices for quality change. Hedonic models that use machine learning methods to predict the price of the new model in the previous period and the price of the old model in the current period have been proposed as a technique for doing quality adjustments at scale when analysing large datasets covering e-commerce transactions.

22.93 Another technique used to adjust the price of a digital product for a quality change is options pricing, which averages observations on the differences in the price of the item caused by the presence or absence of a characteristic offered as an option. This is the same sort of adjustment that is implicitly made by a hedonic regression. For more details on hedonic regression and other methods to measure changes in prices and volumes, see chapter 18 on Measuring prices, volumes and productivity.

22.94 A price measurement problem known as outlet substitution bias occurs when buyers obtain a substantially identical product at a lower price from a new source of supply. The lower cost supplier may have appeared as part of digitalization. For example, a ride sharing digital intermediation platform may offer lower prices without a significant sacrifice in quality compared to the taxis, or a good may sell for less online than offline. The impact on the average price paid of a shift in households' shopping patterns to a new source of supply can be captured by compiling a unit value price index (in which the total expenditure is divided by the total quantity purchased). However, the composition of a unit value index must be homogeneous, as the maintained assumption is that all the items included in its calculation have the same per-unit intrinsic value. (Under the weaker assumption that the average quality of items being purchased is not falling, a unit value index can provide an upper bound measure of the change in price of the product.)

1. Measuring quality change in ICT goods and goods with ICT components

22.95 Frequent quality changes in ICT equipment and ICT durable goods enabled by rapidly advances in semiconductor chip technology have presented challenges for price index compilers ever since this technology was first commercialized. New models of ICT goods have often offered a substantial improvement in performance at almost the same price as the previous model, yet the widely used "matched models" method for price index compilation implicitly assumes that the quality-adjusted prices of the two models in an overlap period are the same. Furthermore, the spread of quality changes enabled by semiconductors beyond ICT goods to many kinds of equipment and durable goods with ICT components, including motor vehicles, is an important element of digitalization.

22.96 Hedonic regression methods or the option price method can be used to estimate the value of quality changes associated with model replacements to enable the price indexes for ICT goods and goods with IT components to capture their quality improvements. In the case of microprocessors, rather than just considering physical characteristics, performance benchmarks or indicators are sometimes included in the hedonic quality adjustment model. If hedonic and options pricing methods are not feasible, information on the cost of production of a new product feature may be used to adjust the product's price index for the quality change. For example, a new capability of a motor vehicle made possible by embedded semiconductors and software might be valued by the producer's cost of adding this feature plus the usual distribution margins included in the retail price.

2. Software and data

22.97 Software and data assets play critical roles in the success of many digital firms. The growing importance of software has expanded the range of uncertainty around the deflator for fixed capital formation in IT products because the volume and quality of different software packages are hard to assess, and in-house production of software is common. The price or volume growth of own-account software and data must generally be inferred from the prices and volumes of the inputs, either assuming no productivity change or using the rate of productivity change of a related activity. Another option for deflating custom software is to use the price index of a related product, such as standardized software products sold by software publishers. Continuous improvement in the performance of artificial intelligence software that learns from experience is not included in the volume of software investment.

22.98 Data is a heterogeneous type of asset, with wide variation in value depending on the topic, context, and circumstances. The volume and value of gross fixed capital formation in data assets are measured by the volume and value of the inputs used to produce the data assets. This could be smaller than the income that the data is expected to generate. If the data is sold, the price received may imply the need to record a revaluation. Normal obsolescence causes both the value and corresponding volume of a data asset to decay.

3. Cloud computing

22.99 Many of the enterprises that supply cloud computing services offer a great variety of detailed products within the broad categories of IaaS, PaaS, and, especially, SaaS. Thus, the length and complexity of the menu of products is likely to pose a challenge for construction of a price index for cloud computing services. Frequent introductions of new or modified products and improvements to existing products compound the difficulty. However, serviceable deflators for cloud computing services can usually be compiled by selecting representative samples of major products with relatively standardized characteristics from each product category and adjusting for quality changes as necessary.

22.100 Cross-border transactions are another common challenge for the estimation of deflators for output and consumption of cloud computing services. International collaboration may be required to overcome the problems of price data availability so that deflators for the cross-border transactions of cloud computing can be compiled.

4. Internet and telecommunications services

22.101 The volumes of internet and telecommunications services have risen rapidly. Households spend more time online and utilize more data, as e-commerce expands, data processing moves to the cloud, and telecommuting becomes routine. Data transmission speeds have also improved. Commonly used methods for constructing consumer price indexes and producer price indexes for telecommunications services may, however, fail to capture this volume growth. To measure the change in the cost of purchasing a given volume of internet and telecommunications services accurately, samples of contracts, products and carriers must be kept up to date and prices must be adjusted for quality changes such as improvements in data transmission speeds or improvements in the geographic coverage offered by a mobile telecommunications provider.

22.102 If the available price indexes for internet and telecommunications services fail to capture the quality improvements that are appropriate to include in the measure of volume growth, an alternative to deflating by a price index is to estimate the volume growth of internet and telecommunications services directly. The volume index is constructed from quantity indicators such as megabytes of data usage. To minimize the risk of distortion from changes in the composition of the aggregate being measured, the quantity indicators should be defined at a detailed level, and the growth rates of the physical indicators for the various detailed products should be aggregated using expenditure or revenue weights.

5. E-commerce and digital intermediation platforms

22.103 Both business-to-household and business-to-business e-commerce transactions enable producers to access markets they could not otherwise serve, and prices may behave distinctively in the markets accessed through digital channels. The prices used to construct the price index for a type of good or service must therefore adequately represent the e-commerce transactions. Similarly, suppliers that predominantly sell through digital channels, including e-tailers, digital platforms, and sellers/producers dependent on digital intermediation platforms, must be must adequately represented in the samples of suppliers.

22.104 Deflators for household final consumption expenditures on items sold online must give appropriate weight to prices from e-tailers, and other sellers/producers selling online, including those selling through digital intermediation platforms. Prices from online retailers and sellers on digital intermediation platforms are often lower than offline prices for similar items. The change in the average price paid by households when households substitute a source of supply with a different price level for their old source of supply for an identical item conceptually represents a decline in the deflator for household final consumption expenditures.

In practice, however, practical difficulties and concerns about possible unobserved differences in quality usually keep price index compilers away from capturing the possible price decline associated with the switch to online sources of supply.

22.105 A common practice in constructing price indexes for a good or service is to treat the price at a single point in time during the month as the price for the entire month. However, online prices tend to change more frequently than once a month. For items with frequent changes in their online price, a monthly unit value will provide a suitable measure of the price during the month if the data on expenditures and unit sales needed to calculate the unit value are available. When available, item-level expenditure data can also furnish detailed weights for a price index or volume index.

6. Expanded access to variety and customization

22.106 Digitalization has given buyers access to vast arrays of products available for purchase and to abundant information on products and sellers and has also increased opportunities for product customization. This expanded access to variety and information has improved buyers' ability to find the specific varieties and suppliers whose characteristics best match their needs or tastes. The upward effects on the level of material well-being achievable with a given level of spending from expanding households' access to variety and improving the matching of product characteristics with users' tastes and needs are beyond the scope of the deflator for household final consumption expenditures in the integrated framework of the SNA. However, they are relevant for understanding the effects of digitalization on the growth of material well-being.

7. Free digital products

22.107 Conceptually, the increased availability to households of free products brought about by digitalization represents a decline in the price and an increase in the volume of the household final consumption basket. The effect of appearance of a free product is straightforward to measure in the case where the free product directly replaces a priced product. When an item that households must purchase separately becomes free, the same total expenditure will command a greater volume of goods and services and the effect on the household consumption deflator will be given by the decline in the cost of the bundle. However, when the services of free online platforms start to be bundled in the prices of advertised products, the theoretical decline in the cost of the bundle will depend on the assumed value of the free online platform services. An extended account that values the free services of digital platforms by their cost of production is discussed below in section F.

22.108 The free digital services and embedded product capabilities in devices such as the smartphone that have appeared since the start of digitalization often enable households to achieve outcomes that previously required purchases of market goods and services. They may also save time or allow their user to do things that they previously could not do. However, the assumptions required to measure the effects on the household final consumption deflator of the appearance of a free digital product that is not a direct replacement for any priced product would often have unacceptable effects on the replicability of the results. Theoretical effects on deflators and volume growth associated with the appearance or disappearance of free digital products that are impossible to measure without hard-to-justify assumptions are beyond the scope of the measures of the integrated framework of national accounts.

F. Analytical tools to increase the visibility of digitalization

22.109 Digitalization is a multidimensional phenomenon that requires multiple indicators and perspectives to understand. Furthermore, the standard aggregates from the integrated framework of the SNA provide limited information on the transactions, products and activities affected by digitalization. In the standard classification of industries and commodities published in the integrated framework of national accounts, digital products are often subsumed in broader aggregates and scattered across different aggregates. Enhanced visibility into digital enterprises, products, and transactions is therefore needed for a full understanding of the effects of digitalization on the economy and of the performance and the evolution of a digitalized economy. Distinguishing the digital components of the standard aggregates will also provide

reassurance to the users of the national accounts that the output and use of digital products is being fully measured as part of those aggregates.

22.110 A thematic account on the digital economy, including the related digital supply and use tables, and an extended account on free services of online platforms are flexible tools for bringing the impact of digitalization on the economy into focus, where flexibility means that the content that is appropriate to include depends, in part, on which aspects are locally important and practical to measure. These tools complement each other. The conceptual framework of the digital supply and use tables will help to ensure the accuracy and consistency of the data presented in the digital economy thematic account, while the digital economy thematic account is a tool for communicating the key information contained in the digital supply and use tables in a convenient and accessible way and for providing additional context. Also, an extended account can present an alternative framework for accounting for the unpriced services that free online platforms supply to households. Households' consumption of the free services of digital platforms funded by advertising and the collection of data is a major element of the gains in material well-being associated with the digital transformation.

1. Thematic account on the digital economy

22.111 Compiling a thematic account on the digital economy and the related digital supply and use tables can bring visibility to activities, products and transactions affected by digitalization that are subsumed in broader aggregates in the standard classifications of the integrated framework of national accounts. A digital economy thematic account provides alternative aggregations and additional detail on products and transactions to separately identify the digital segments of industries, digital products, and digital transactions and can highlight key information from the digital supply and use tables. The conceptual framework of the digital supply and use tables helps guide the compilation of the digital economy thematic account. (For general background on thematic accounts and the use of supply and use tables to compile a thematic account, see chapter 38 on Thematic and extended accounts.)

22.112 In developing a digital economy thematic account, the items that are most important for understanding the impact of digitalization should be prioritized. These items are likely to include breakouts of digitally ordered and digitally delivered transactions. They may also include the output and value added of the industries supplying ICT goods and software, business-to-business and business-to-household e-commerce margin services, and other digital services such as cloud computing services, telecommunications and internet services, digital intermediation services, digital advertising services, and digital financial services. The suppliers of digital products might be classified into providers of digital infrastructure (digitally enabling industries), e-tailers, data- and advertising-driven platforms, digital intermediation platforms, financial service providers primarily operating digitally, and other service providers operating only digitally. The *OECD Handbook on compiling digital supply and use tables* provides further information on these categories.

22.113 The thematic account should summarize the uses of ICT goods and digital services, including uses for own-account and purchased fixed capital. The fixed capital formation that enables digital activity is also relevant for understanding the impact of digitalization. In addition to ICT equipment, software and data, this fixed capital includes the infrastructure of data centres and networks.

22.114 Trade flows of ICT goods and digital services are important to include in the thematic account on the digital economy. A decomposition of exports and imports by major category of products may also be important to report to show the source of the differences between domestic production and domestic uses of the items in these categories. International transactions that are digitally ordered or digitally delivered are additional aspects that should be highlighted in the thematic account. The indicators in the digital economy thematic account need not be limited to products within the production boundary applied in the integrated framework of the SNA. The free services that digital platforms supply to households valued by their cost of production can be reported as an addendum item.

2. Digital supply and use tables

22.115 The digital supply and use table) analyse the impact of digitalization along the three dimensions of the nature of the transaction (digitally ordered, digitally delivered, or intermediated by a digital intermediation platform), digital products and digital industries by adding new detail and aggregations to the standard supply and use tables. This approach ensures that the framework for analysing digital transactions, products and industries is aligned with existing classifications and takes advantage of those classifications. The supply table classifications enable a decomposition of the domestic and imported sources of supply of digital products, and the use table classifications enable a decomposition of the uses of digital products for intermediate consumption, final consumption, gross fixed capital formation, and exports.

22.116 As conceptually defined, the digital supply and use tables have cells that can accommodate all potentially relevant transactions, which makes the number of possible entries in the new rows and columns large. To reduce the compilation burden and source data requirements, a set of high priority aggregates has been identified. The recommended high priority items include (i) decompositions of expenditures by the nature of the transaction, (ii) output and intermediate consumption of digital intermediation services, cloud computing services, and ICT goods and digital services, and (iii) the output and gross value added of digital industries. (For detailed guidance on compiling digital supply and use tables, see the *OECD Handbook on compiling digital supply and use tables*.)

22.117 E-commerce transactions are defined by digital ordering using methods specifically designed for the purpose of receiving or placing orders. To provide insight into digitally ordered transactions, the digital supply and use tables include new rows that distinguish these transactions, along with a further decomposition into transactions ordered directly from a counterparty, transactions ordered through a resident digital intermediation platform, and transactions ordered through a non-resident digital intermediation platform.

22.118 Digital delivery of services is also an important aspect of digitalization. The digitally delivered portion of the output of domestic industries and imports may be shown in "of which" columns in the digital supply table, and the digitally delivered portion of household final consumption and exports may be shown in "of which" columns in the digital use table.

22.119 To bring visibility to the output and intermediate consumption of digital products, new rows are added to the supply and use tables on ICT goods, cloud computing services, digital intermediation services, and all other digital services. An addendum on products beyond the standard production boundary may also have rows for free services of digital platforms and free services of online communities of volunteers. Including imputed values of these free services in the digital supply and use tables will facilitate compilation of an extended account on free digital services.

22.120 The output and gross value added of digital industries and related industries are shown by incorporating seven new columns in the digital supply and use tables. One column contains the digitally enabling industry, which comprises the producers of ICT goods and services enabling the use of information technology. The other six columns cover online platforms funded by advertising and data collection, digital intermediation platforms, producers that depend on digital intermediation platforms, e-tailers, financial service providers primarily operating digitally, and other producers operating only digitally.

3. Extended account to increase the visibility of the free services of digital platforms consumed by households

22.121 Free online platforms funded by advertising and collection of users' data have become part of daily life and the time spent by households using platforms offering free services such as social media, search, entertainment, and information suggests that households place a high value on the free services of digital platforms funded by advertising and data collection. An estimate of the value of these free services is therefore relevant for understanding and analysing the impact of digitalization on the growth of household final consumption of goods and services. Yet the value of the free services of platforms funded by advertising and collection of users' data is not estimated as part of compiling the integrated framework of national accounts, because the cost of supplying these services is implicitly included in the price of the advertising services and data sold by the platform and the platform's own-account fixed capital formation in data assets. In effect, in the integrated framework of national accounts, the digital platform is itself the user of the free

services, and the benefits that households derive from these services are merely a positive externality of the production of advertising services and data assets.

22.122 To provide information on households' direct final consumption of the "free" services of digital platforms funded by advertising and data collection, compilation of an extended account showing the value of these services is encouraged. Extended accounts are a flexible tool for presenting concepts that extend the conceptual boundaries applied in the integrated framework of the SNA, including expanded measures of economic activity and household final consumption expenditures that extend the production boundary.

22.123 Households' final consumption of the free services of digital platforms funded by advertising can be included in an extended account as part of expanded measures of household final consumption expenditures and output. Assembling an audience by supplying free services is part of the process of producing advertising services, so the cost of supplying the free services is already included in GDP indirectly as part of the price of advertising services. Similarly, household final consumption already indirectly includes the cost of the advertising as part of the prices of the advertised products. However, expanded measures of economic activity and household final consumption that reflect the simultaneous direct consumption of these free services by the households using the platform and use of these services in the production of advertising can be analytically useful.

22.124 In the framework of the extended account, the expanded measure of households' final consumption can also include unpriced services produced by the platforms' software and hardware assets in exchange for households granting a license to collect data on their behaviour and characteristics (or observable phenomena). The licenses to collect the data are viewed as a payment in kind for the platform's unpriced services and the platform's unpriced services are viewed as a payment in kind for the licenses to collect the data.

22.125 The imputed values of items that are bartered for each other (the unpriced platform services consumed by households and the opportunities for the platform to collect the households' data) must be the same. Consequently, there are four theoretical ways to value the platforms' unpriced services: (i) the platform's cost of producing the free services, (ii) the value that the households place on the free services, (iii) the value that the households place on the privacy of their data that they give up, and (iv) the economic benefits that the platforms derive from users' attention and the opportunity to collect their data. The need for consistency within the system of measures of the transactions of the free platforms makes the cost of producing the services the most suitable of these four theoretical values for the extended account. Own-account gross fixed capital formation in data assets is usually measured by the cost of production approach, so valuing the licenses to collect data on users' observable phenomena by the costs of producing the platform services exchanged for these licenses would be consistent with the general approach to measurement of own-account fixed capital formation in data assets. Costs of production are also more practical to estimate than the other three theoretical values of the platform's free services.

22.126 Although the payment in kind from the platform to the households consists of services produced by the platform, the access given to the platform to collect data on the households' observable phenomena that is received in return is not a service produced by the households, and so the imputed payment for the license is classified as a rent. Licensing collection of data on one's observable phenomena is not a production activity, and observing and recording a subject's characteristics and actions does not represent intermediate consumption of services. However, if households actively assist in the collection of their data, the steps they take to assist with the data collection can be considered as production of services (albeit that for the time being such cases are rare).

22.127 The expanded measures of free platforms' output and value added in the extended account will include the imputed value of the free services consumed by households. The balance of earned incomes of the platforms will, however, be unchanged. The platforms' extra value added from imputed sales of services to households will equal the platforms' imputed payments of rent for the licenses to collect households' data. Household saving will also be unchanged because the imputed household final consumption expenditures on platform services will equal households' imputed income from licensing collection of their data.

22.128 In addition to allowing collection of data on their observable phenomena, households provide economic benefits to free platforms by creating and supplying user-generated content without monetary compensation. In the integrated framework of national accounts, households that receive monetary payments for the content

they post online are unincorporated household enterprises producing services, but content supplied without payment is beyond the production boundary. To increase the visibility of households' unremunerated creation of user-generated content, the extended account could also treat user-generated content that is uploaded without monetary payment as part of a barter transaction in which the platform user receives unpriced platform services in exchange for the user-generated content. Under this alternative approach, the platform's unpriced services are used by the content creators as inputs to produce the user-generated content and the user-generated content is used by the platform to produce data assets. The net effect is to increase in the measure of the platforms' own-account gross fixed capital formation in data assets.

Chapter 23: Globalization

This is a common chapter with chapter 15 of *BPM7*, and for the most part, the text is identical in both the *2025 SNA* and *BPM7*.

A. Introduction

23.1 Globalization refers to the economic integration of economies around the world. Reduced trade barriers and advancements in communication, transportation and technology have facilitated a rise in the cross-border movements of goods, services, capital, information and people in recent decades. Those factors have also contributed to increasingly complex corporate structures that span across multiple economies. Such multinational enterprise (MNE) groups can be set up for many reasons, including to reduce labour costs, transportation costs, taxes, and proximity to markets. In addition, other global manufacturing and distribution arrangements, such as factoryless goods production and merchanting, have added to the complexities of interrelations between economies. These globalization activities pose challenges to traditional macroeconomic statistics, which are based on the concepts of residence and economic presence.

23.2 This thematic chapter is designed to elaborate on issues related to globalization that are touched upon throughout the SNA. It focuses on the conceptual, measurement, and analytical challenges that arise from deeper corporate linkages and the fragmentation of production processes across economies. These challenges motivate additional breakdowns and supplementary presentations, which provide alternative views or additional details that complement traditional macroeconomic statistics and are vital for better understanding the connections between economies.

23.3 To address the statistical challenges related to globalization, it is important to implement harmonized methodological guidelines to foster comprehensive data collection and international comparability. Even if headwinds develop to some of the factors driving globalization, the guidance in this chapter will still yield macroeconomic statistics that provide insights into the changing nature of globalization.

23.4 This chapter is organized as follows. Section B describes global production arrangements, while section C defines MNE groups and discusses their role in globalization. Section D presents some of the measurement challenges related to MNE groups and global production. Section E introduces existing macroeconomic indicators, additional breakdowns, and alternative presentations that can help address these challenges and meet user needs. Finally, section F describes analytical tools that have been developed to better understand the relationship between globalization and the domestic economy, including trade in value added and global value chains.

B. Global production

23.5 A distinct aspect of globalization is the fragmentation of production in production chains between resident and non-resident firms – the basis of global value chains (GVCs). GVCs are a fundamental pillar of the modern global economy, enabling companies to take advantage of global specialization, cost efficiencies, comparative advantages and market opportunities. See section F for more details about GVCs.

1. Global manufacturing and distribution arrangements

23.6 Global manufacturing and distribution arrangements can be broken into different types. Figure 23.1 presents a decision tree to identify whether a transaction in a global arrangement is traditional merchandise trade, re-exports, merchanting, processing, or factoryless goods production. These arrangements are described below, and examples are provided in Box 23.1.

Figure 23.1: Decision tree for global manufacturing and distribution arrangements

Note: The decision tree is from the point of view of the principal enterprise that organizes or arranges the manufacture and/or movement of goods and has ownership of the goods at some stage. Principals may engage in several types of production arrangements that may also involve a combination of domestic and foreign production.

Re-exports

23.7 ***Re-exports are goods produced in other economies, and previously imported with a change of economic ownership, that are exported with no substantial transformation from the state in which they were previously imported.*** The price of the re-exported good may differ from its price at the time it was originally imported, due to factors such as transport costs, dealer's margins, and holding gains or losses. For goods to be included as re-exports, a resident must acquire and subsequently resell the goods with the goods passing through the territory. Goods that are bought and resold but do not pass through the territory of the unit initially purchasing the goods are included in goods under merchanting—see paragraph 23.11. The distinction between re-exports and goods traded within global manufacturing arrangements is discussed in paragraphs 23.34 and 23.35. Goods in transit are not recorded in imports or in re-exports – instead, they are excluded from the general merchandise of the territory of transit. Also, goods cleared by customs, but re-exported without coming into ownership by a resident of that economy, should not be included in re-exports. In contrast to re-exports, in the case of returned goods, there is no change of ownership or the parties later agree to annul the change of ownership.

23.8 In cases where the state of the imported goods is substantially transformed, which could be indicated by a change in the *Harmonized System (HS)* code, goods are recorded as domestically produced exports rather than re-exports (e.g., goods that have been assembled or processed, or goods that have become rags, waste, scrap, or antiques). Used goods that were previously imported and retain the same *HS* code, but have suffered wear and tear, could in most cases be included in re-exports depending on the rules of origin that the economy applies. Whereas international recommendations on rules of origin exist (see *International Convention on the Simplification and Harmonization of Customs Procedures (Revised Kyoto Convention)(World Customs Organization))*, the origin of the goods will be determined at a national level. The case of imported goods processed without change of ownership is discussed in paragraphs 23.20 to 23.25. Goods temporarily imported or exported without a change of ownership, such as for repair or operating lease, are not included in either re-exports or re-imports.

23.9 Where possible, re-exports should be shown separately as a supplementary item, particularly in economies where re-exports are a significant proportion of exports. Because re-exported goods are not produced in the economy concerned, they have less connection to the economy than other exports. Economies that are major transshipment points and locations of wholesalers often have large values of re-exports. It may be of interest to derive the value of imports destined for re-export, calculated from re-exports with any timing adjustment.

23.10 ***Re-imports are domestically produced goods imported in the same state as previously exported, without any substantial transformation occurring on the goods while they were outside the territory.*** Where significant, re-imports may be shown separately. Re-imports tend to arise in order to reverse a previous export, while re-exports generally arise because of transport, storage or distribution through a territory other than that of the buyer or seller. For the goods to be included in re-imports, a non-resident must have acquired the goods, then resell them to a resident with the goods leaving and re-entering the territory. (In cases where there was no change of ownership, they are omitted from imports, e.g., goods for repair or goods sent for processing.)

Merchanting

23.11 ***Merchanting is defined as the purchase of goods by a resident (of the compiling economy) from a non-resident combined with the subsequent resale of the same goods to another non-resident without the goods being physically moved in and out of the compiling economy.*** Merchanting occurs for transactions involving goods where physical possession of the goods by the owner is unnecessary for the process to occur. The distinction between merchanting and global manufacturing arrangements is discussed in paragraphs 23.34 and 23.35.

23.12 ***Inverse merchanting is a special case of merchanting, occurring when both the unit that is selling to the non-resident merchant and the unit that is subsequently purchasing from the non-resident merchant are both resident in the same economy and where the goods do not leave and re-enter the economy of the units selling to and purchasing from the non-resident merchant.*** For the economy of the merchant, this is recorded in the usual way as net exports of goods under merchanting (see paragraph 23.13 below). For the

counterpart to the merchanting economy, it may be challenging to identify inverse merchanting, because there are no physical cross-border flows. However, the goods account of the counterpart to the merchanting economy should reflect that a change of economic ownership happens twice, firstly, as export of general merchandise when the goods are sold to the non-resident merchant and secondly, as import of general merchandise when the goods are subsequently purchased from the non-resident merchant, and appropriate adjustments should be made if international merchandise trade statistics (IMTS) flows are used as a source.

23.13 The treatment of merchanting is as follows:

a. The acquisition of goods by merchants is shown under goods acquired under merchanting as a negative export of the economy of the merchant;

b. The sale of goods by merchants is shown under goods sold under merchanting as a positive export of the economy of the merchant;

c. The difference between sales and purchases of goods for merchanting is shown as the item "net exports of goods under merchanting." This item includes merchants' margins, holding gains and losses, and changes in inventories of goods under merchanting. As a result of losses or increases in inventories, net exports of goods under merchanting may be negative in some cases.

d. Because the change of ownership differs from the physical flow of goods, merchanting entries are valued at transaction prices as agreed by the parties, not free on board (FOB).

23.14 The partner allocation of net exports of goods under merchanting should be done by adding the positive and negative entries of goods under merchanting for each partner economy. When compiling statistics by partner economy for goods under merchanting, it is common to see negative net exports for partner economies from which the merchant acquires goods.

23.15 The rationale for recording goods under merchanting in the goods account and for treating purchases of goods for merchanting as a negative export rather than an import is as follows. Firstly, the merchant acts similar to a wholesaler or a retailer whose output is measured by the trade margin realized on the goods they purchase for resale. Secondly, the treatment of the net exports as goods rather than services maintains a global trade in goods balance. Finally, if the amounts of imports and exports of the merchant were recorded gross, this would artificially inflate the merchandise trade in the economy of the merchant.

23.16 The merchanting label is only used in the accounts of the economy in which the merchant is resident. In the counterpart exporting and importing economies, export sales to merchants and import purchases from merchants are included under general merchandise. Goods under merchanting are shown separately in statistics of the economy of the merchant because they are of interest in their own right and because they are not covered by the customs system of that economy.

23.17 Wholesaling, retailing, commodity dealing, and management of manufacturing may also be carried out under arrangements where the goods are present in the economy of the owner, in which case they are recorded as general merchandise, rather than as merchanting.

23.18 When a merchant resells goods to a resident of the same economy as the merchant, this does not meet the definition of merchanting. Accordingly, the purchase of goods is shown as imports of general merchandise to the economy. If the unit that purchased from a merchant in the same economy subsequently resells the goods to a resident of another economy, whether or not the goods enter the economy of the merchant, the sales of goods are recorded in exports of general merchandise from the economy where both the merchant and the unit that purchased the good from the merchant are resident. (Although such a case is very similar to merchanting, it does not meet the definition given above. In addition, it is impractical for the first merchant to record the purchases as merchanting because that merchant may not know whether or not the second merchant will bring the goods into the economy.)

23.19 Sometimes a purchaser may be uncertain whether the goods will be resold to residents of the same economy or others. In this case, intentions can be used as an indicator, with subsequent adjustment if intentions are not realized.

Processing

23.20 Under a processing arrangement, the principal owns or acquires material inputs and purchases manufacturing services from a non-resident processor (who may provide some material inputs), to substantially change the goods. The ownership of the goods does not change during the manufacturing process. The finished goods are then returned to the principal, sent elsewhere for further processing, or dispatched to final customers. In the simplest scenario, goods are sent physically abroad from the economy of the principal to the economy of the processor and returned after processing. In this case, the movement of the goods are recorded in the IMTS of both economies, but no general merchandise transactions would be recorded [in the goods account]. Figure 23.2 illustrates a more complex example of a processing arrangement.

Figure 23.2: Goods for processing arrangement

Note: The principal in Economy A purchases material inputs from Economy C. The goods are shipped to Economy B for further processing. The final goods are sold to Economy D. The principal has ownership of the goods during the processing, but the goods may not pass through Economy A during the production process. There are variations of processing arrangements. Material inputs may also be sourced from Economy A, Economy B or Economy D. Similarly, the final goods may be sold to Economy A, Economy B or Economy C. The key aspect in all variations is that the processor in Economy B does not take ownership of the goods during the processing. In all variations, the physical flow of goods differs from the change of ownership to some extent.

23.21 In some cases, the processor provides other materials that are used in the manufacturing process alongside

the material inputs owned by the principal. Other materials provided by the processor are treated as intermediate consumption of the processor. In many cases, the principal supplies inputs of intellectual property such as product design without charging the processor for the right to use.

23.22 As there is no change of ownership of the processed goods between the processor and the economy from which the goods have arrived or between the processor and the economy to which the goods are dispatched, no general merchandise transactions are recorded by the processor.

23.23 Purchases of material inputs (i.e., goods to be processed) by the principal in a processing arrangement may be obtained from residents of the same economy as the principal, the same economy as the processor, or a third economy. The treatment is as follows:

a. when the goods are acquired from residents of the same economy as the principal, there is no international transaction; and

b. when the goods are acquired from residents of the same economy as the processor or a third economy, the principal records imports of general merchandise.

23.24 Sales of finished goods (i.e., goods after processing) are treated as follows:

a. when the goods are sold to residents of the same economy as the principal, there is no international transaction; and

b. when the goods are sold to residents of the same economy as the processor or a third economy, the principal records the sale as exports of general merchandise.

The principal could report merchanting in the case of minor processing (see paragraph 23.11 and the decision tree in figure 23.1).

23.25 The processing fee that the processor charges the principal under a processing arrangement should not be recorded under general merchandise but as a service under manufacturing services on physical inputs owned by others.

Factoryless Goods Production

23.26 ***A factoryless goods producer is a principal that controls the production of a good by undertaking the entrepreneurial steps and providing the technical specifications required to produce the good, but that outsources all or most of the material transformation process required to produce the output.*** The factoryless goods producer supplies inputs of intellectual property such as product design, without charging for the right to use the intellectual property, but outsources both the acquisition of all or most of the material inputs and the manufacturing process to a, [usually non-resident,] contractor. The factoryless goods producer buys the finished goods from the contractor at a price that includes the value of material inputs and processing but does not include the value of intellectual property used in the transformation process. The finished goods may be used by the principal as inputs into further production, sent elsewhere for further processing, or dispatched to final customers. It is recommended to classify factoryless goods producers as part of manufacturing. Figure 23.3 illustrates one example of a factoryless goods producer arrangement.

23.27 Under factoryless goods production, the material inputs are substantially transformed by the contractor. The role of intellectual property products (such as of research and development, design and innovation) provided by the principal to the contractor, without receiving a payment for right to use, should be significant. As a general guideline, the input values of intellectual property products as well as marketing assets (such as trademarks, brand names and logos) supplied by the factoryless goods producer will be at least as large as the amount paid to the contractor less the cost to the contractor of the material inputs.

23.28 The goods that the factoryless goods producer buys from the contractor are recorded as general merchandise imports at the value agreed between the principal and the contractor. These goods are considered inputs to the production of the factoryless goods producer.

Figure 23.3: Factoryless goods production

Note: The principal in Economy A supplies the design specifications but outsources the acquisition of the material inputs and the manufacturing to a contractor in Economy B. The contractor acquires the material inputs from Economy C. The contractor sells the finished goods to the principal at a price that includes the cost of the material inputs plus the manufacturing costs. The goods are then sold to the final buyer in Economy D at a price that will further reflect the input of the design specification or other intellectual property by the principal. The final goods may be shipped directly from Economy B to Economy D without passing through Economy A. There are variations of factoryless goods production. Material inputs may also be sourced from Economy A, Economy B, or Economy D. Furthermore, the principal may source the material inputs and sell them via merchanting to the contractor. Finished goods may also be sold to Economy A, Economy B, or Economy C. In all variations, the contractor has ownership of all or most of the material inputs and the principal supplies inputs of the intellectual property without charging for the right to use.

23.29 Sales of finished goods are treated as follows:

a. when the goods are sold to residents of the same economy as the factoryless goods producer, there is no international transaction but a domestic transaction to show the sale of the goods to final consumers in the resident economy; and

b. when the goods are sold to residents of the same economy as the contractor or a third economy, the factoryless goods producer records the sale as exports of general merchandise.

23.30 There are no manufacturing services to record between the contractor and the principal in a factoryless goods production arrangement.

Sales of material inputs by the principal

23.31 Material inputs that the processor or contractor contribute to the manufacturing process may be acquired from the principal, in which case there is a change of ownership of goods between the principal and the processor or contractor. Materials may also be procured by the principal from abroad and sold to the processor or contractor in which case the principal may act also as a merchant.

Valuation of transactions in a global manufacturing arrangement

23.32 For goods traded within a global manufacturing arrangement where the change of ownership differs from the physical movement of the goods, the application of FOB-type values does not apply. Instead, transport and insurance costs are shown as payable according to the arrangements of the parties; that is, the amount is payable by the party invoiced to pay the expense. For the movement of goods not included in general merchandise, such as goods that the processor receives or dispatches with no change of ownership in a processing arrangement, a similar treatment applies, that is, the transport and insurance costs are shown as payable according to the arrangements of the parties.

Differences between processing and factoryless goods production arrangements

23.33 A principal in a global manufacturing arrangement may be engaged in both processing arrangements and factoryless goods production arrangements and may switch from one manufacturing arrangement to another. The difference between the two arrangements is based on the level of ownership of material inputs and intellectual property by the principal. In a processing arrangement the principal has ownership of all or most of the material inputs. In a factoryless goods production arrangement the principal may provide some material inputs but must supply the intellectual property or knowhow (without receiving payment for the right to use the intellectual property) that goes into the manufacturing process.

Distinction between global manufacturing and global distribution arrangements

23.34 Merchanting and re-exports are used for wholesaling and retailing. They may also be used in commodity dealing and for the management of global manufacturing arrangements. If the goods are substantially transformed during the period the goods are owned, as a result of manufacturing services performed by other units, or if the goods are the results of factoryless goods production, then the cross-border transactions in goods are recorded under general merchandise imports and exports and may be recorded as goods traded under a global manufacturing arrangement. In other cases where there is no substantial transformation of the goods, then the goods may be recorded as re-exports, if they pass through the economy of the owner; they are included under merchanting, if they do not pass through the economy of the owner, with the selling price reflecting minor processing costs as well as wholesale margins.

23.35 Factoryless goods producers, merchants and re-exporters may all purchase goods from non-residents and sell the same goods to other non-residents. The factoryless goods producer, however, controls the production process and supplies the intellectual property or the “know how” for the production of the good. For this reason, a factoryless goods producer is considered a manufacturer and is different from a merchant or re-exporter, and the purchase of the finished goods from the contractor and the subsequent sale to the final purchaser are recorded gross under general merchandise in the economy of the factoryless goods producer (and not as net exports under merchanting or re-exports).

Box 23.1: Examples of global manufacturing and distribution arrangements

Example 1—Re-exports

A seaport in Economy A serves as a gateway hub for international trade for economies in the region. One practice is for car dealerships to set up near the port. Individuals can travel to the seaport and buy new and second-hand cars directly from the dealer in Economy A.

A car dealer of Economy A imports a car from Economy C for 1000. A resident of Economy B travels to the seaport and buys the car for 1200, driving home through Economy A to Economy B.

Since the goods are imported and subsequently exported, with a change of ownership happening twice in Economy A, and the goods pass through Economy A, the goods are recorded gross in the imports and exports of Economy A as follows:

General merchandise imports (from Economy C)	1000 Expenditure
General merchandise exports (to Economy B)	1200 Revenue
Of which: Re-exports	1200 Revenue

(As the goods are in excess of customs thresholds in this example, they are included in general merchandise rather than in travel).

Example 2—Merchanting with manufacturing services that do not change the condition of the goods

A resident of Economy A acquires books from a resident of Economy C for 10. The resident of Economy A has them sent to Economy B, without the books passing physically through Economy A, for a resident of Economy B to put in boxes, for a charge of 3 payable by the resident of Economy A. The books are then sold by the resident of Economy A to a resident of Economy D for 20.

Since the goods are in the same condition, the merchanting treatment applies. The goods and services account entries for Economy A would be:

Goods acquired under merchanting (from Economy C)	–10 Revenue (negative exports)
Goods sold under merchanting (to Economy D)	20 Revenue
Net exports of goods under merchanting	10 Revenue
Manufacturing services on physical inputs owned by others (from Economy B)	3 Expenditure

(Economy C records goods exports of 10 to Economy A under general merchandise; Economy B records services exports of 3 with Economy A; and Economy D records goods imports of 20 under general merchandise with Economy A.)

Example 3—Processing arrangement: Manufacturing services that change the condition of the goods

A resident of Economy A (the principal) acquires oil from a resident of Economy C for 10. The oil is sent to Economy B, without passing physically through Economy A, for refining by a resident of Economy B, for a charge of 15; the oil continues to be owned by the resident of Economy A. The refined product, for instance fuel, is then sold to a resident of Economy D for 30.

Since the goods are not in the same condition, the merchanting concept does not apply. The goods account and services account entries for Economy A would be:

General merchandise import (from Economy C)	10 Expenditure
General merchandise export (to Economy D)	30 Revenue
Import of manufacturing services on physical inputs owned by others (from Economy B)	15 Expenditure

(Economy C records goods exports of 10 to Economy A, Economy B records only manufacturing services on physical inputs owned by others exports of 15 to Economy A (not exports or imports of goods), and, Economy D records goods imports of 30 from Economy A under general merchandise (not goods imports from Economy B).

Economy B may wish to identify the values of material inputs received and goods sent abroad after processing as supplementary items.

Example 4—Factoryless goods production

A resident of Economy A (the principal, or factoryless goods producer) contracts the production of sportswear to a manufacturer in Economy B. The contractor in Economy B purchases the material inputs from Economy C for 3. The transformation of the material inputs by the contractor in Economy B is done under specifications provided by the principal. The principal purchases the finished sportswear from the contractor for 7 (which was agreed as part of the contracting arrangement), and resells these goods directly to the final buyer in Economy D for 28 without the goods passing through Economy A.

The goods account entries for Economy A would be:

General merchandise imports (from Economy B)	7 Expenditure
General merchandise exports (to Economy D)	28 Revenue

The goods account entries for Economy B would be:

General merchandise imports (from Economy C)	3 Expenditure
General merchandise exports (to Economy A)	7 Revenue

(Economy D and Economy C should record the counterpart transactions with Economy A and Economy B, respectively. No trade is recorded between Economy B and Economy D.)

Example 5—Factoryless goods production with material inputs acquired and resold under merchanting by the principal to the contractor

A resident of Economy A (the principal, or factoryless goods producer) contracts the production of sportswear to a manufacturer in Economy B. The principal sources the material inputs from Economy C for 3 and resells the material inputs to the contractor in Economy B for 4, without the goods passing through Economy A. As in Example 4, the transformation of the material inputs by the contractor in Economy B is done under specifications provided by the principal. The principal purchases the finished goods from the contractor for 8, and resells these goods to the final buyer in Economy D for 28 without the goods passing through Economy A.

The goods account entries for Economy A would be:

Goods acquired under merchanting (from Economy C)	–3 Revenue (negative exports)
Goods sold under merchanting (to Economy B)	4 Revenue
Net exports of goods under merchanting	1 Revenue
General merchandise imports (from Economy B)	8 Expenditure
General merchandise exports (to Economy D)	28 Revenue

(Economy C records goods exports of 3 to Economy A; Economy B records goods imports of 4 and goods exports of 8 with Economy A; and Economy D records goods imports of 28 with Economy A.)

C. Multinational enterprise (MNE) groups

1. Definition of MNEs, MNE groups, and concept of control

23.36 ***An MNE is a legal entity that has at least one non-resident affiliate or branch, and exercises control over its affiliate(s) or branch(es) either directly – by having over 50 percent of the voting power in the unit—or by indirect transmission of control. The MNE is the ultimate controlling parent – the direct investor at the top of the control chain.*** The MNE group consists of the MNE and the set of units – regardless of their economies of residence – that are under the control of the same ultimate controlling parent .

23.37 ***Control refers to the ability to determine general corporate policy of a corporation, where general corporate policy is understood in a broad sense to mean the key financial and operating policies relating to the corporation's strategic objectives as a market producer. In practice, control is determined to exist if an investor has more than 50 percent of the voting power in an enterprise. The control may be direct***

(through ownership of voting power or other arrangements) or indirect (through ownership of enterprises that in turn have voting power). In the case of control by government, or another public unit, control can also be exercised in other ways than owning more than half of the voting power. This definition of control is aligned with the Framework of Direct Investment Relationship (FDIR), which is a generalized methodology for identifying and determining the types and extent of direct investment relationships. (For more information, see chapter 6 of *BPM7* and the *BD*.)

23.38 It is important to distinguish between ownership and voting power when determining control. While ownership shares and voting power generally are aligned, this is not always the case. For instance, voting power may be greater or less than the percentage of shares held when there are "golden shares" or dual classes of shares (for example in the case of the existence of non-voting shares, or in the case some shares have higher weights that allow one or more parties to exercise voting power disproportionately to their share of ownership).

2. Understanding the role of special purpose entities (SPEs) within MNE Groups

23.39 Through their activities, MNEs manage production, trade, financial services and intermediation, direct investment, and international transfer of knowledge and technology, with the aim of maximizing their global after-tax profits. MNEs often have significant impact on the real economy through their activities, but they sometimes set up units with limited presence in the form of employment and physical production to benefit from different regulatory and tax regimes. Special purpose entities (SPEs) are specific cases of such units and are defined in paragraph 5.81 and 5.82. The decision tree in figure 23.4 can also be used to identify SPEs.

Figure 23.4: Decision tree to identify resident SPEs

23.40 Although SPEs have no or little physical presence, they can have a substantial impact on traditional macroeconomic statistics – for example, inflating (foreign) direct investment statistics due to pass-through funds or data for services exports if they own intellectual property products. Host jurisdictions are encouraged to report supplementary data for SPEs, particularly when such entities are significant.

23.41 A typology of SPEs is presented in table 23.1. It can be used to identify SPEs and to determine their appropriate institutional sector. The typology aims to delineate the different types of SPEs based on their economic functions and relate them to their institutional sector.

23.42 The typology should be used as a complement to the definition of SPEs as it is not meant to be either exhaustive or prescriptive. The units covered by the typology may be SPEs, but not all units of the types listed are classified as SPEs. For instance, special purpose units may include securitization vehicles, but not all securitization vehicles meet the definition of SPEs. A securitization vehicle would, for example, not be classified as an SPE if it has significant transactions with residents.

Table 23.1: Typology of SPEs

No	SPE Type	Description	*Relevant paragraphs in 2025 SNA*	*Institutional (sub)sector*
Category I: Corporate groups' captive financial units ***(Those captive units created by financial or non-financial non-resident corporations to fulfil specific financial activities, other than insurance, for the sponsor)***				
1.1	Conduits	Raising or borrowing funds, often from unrelated enterprises, and remitting those funds to its parent or to another related enterprise. Typically, do not transact on the open markets on the asset side.	5.85 and 5.172	S1227
1.2	Holding companies	Owning a controlling level of equity in subsidiaries, without actively directing them (Passive holding corporations)	5.76 to 5.80	S1227
1.3	Holding financial assets for securitization		5.85	S1227
1.4	Intra group lending companies	Loan funding from and to intra group companies Units taking and granting inter-company loans	5.85 and 5.172	S1227
1.5	Captive factoring and invoicing companies	Concentrating sales claims and invoicing sales.	5.85	S1227
1.6	Captive financial leasing companies	Engaging in lease-in lease-out agreements or as a financial intermediary in a chain of vehicles in which the end vehicle is involved in the leasing of equipment or fixed assets.	5.85	S1227

No	SPE Type	Description	*Relevant paragraphs in 2025 SNA*	*Institutional (sub)sector*
1.7	Other captive financial companies	Dealing with financial needs of a group, such as financing particular projects and loan origination.		S1227
Category II: Specialized financial units ***(Those financial units, with a degree of operational autonomy, that have been created for the purpose of isolating the risks of the parent companies to structure financial transactions for or securitize assets of the parents)***				
2.1	Captive insurance companies	Providing insurance to group enterprises.		S1228
2.2	Securitization vehicles/Financial vehicle corporations	Carrying out securitization transactions in order to isolate the payment obligations of the undertaking from those of the originator, or the insurance or reinsurance undertaking (in the case of insurance-linked securitizations). Repackaging of existing financial assets.	5.85	S1225
2.3	Holding financial and non-financial assets (including real estate) for related companies	Holding financial and non-financial assets of related companies with the goal of capital appreciation, interest/dividend income, and other income.	5.76 to 5.80	S11 and S1225
2.4	Companies carrying out other financial functions	Performing factoring, invoicing on open markets, financial leasing on open markets, and other financial assets management.		S1225
Category III: Corporate groups' non-financial units **(*Those SPEs created by a financial or non-financial non-resident unit for the purpose of fulfilling specific non-financial activities*)**				
3.1	Ancillary companies	Registered or incorporated companies providing ancillary services that are not resident in the same economy as its parent.		S11
3.2	Operational leasing companies	Holding fixed assets, such as planes, vessels, and machinery, for the purpose of leasing them out.		S11
3.3	Merchanting companies	Purchasing goods from a non-resident and re-selling the goods to another non-resident (merchanting companies have ownership of the goods traded).		S11
3.4	Royalty and licensing companies	Concentrating group receipts concerning royalties and similar flows received from intellectual property rights and trademarks. Such a company of an SPE-type		S11

No	SPE Type	Description	*Relevant paragraphs in 2025 SNA*	*Institutional (sub)sector*
		receiving royalties or similar flows for a group of enterprises or individuals is regarded as an independent royalty and licensing company.		
3.5	Legal ownership of intangible assets	Holding intangible assets for a related company or group of companies.		S11
Category IV: Wealth management units (***Those SPEs created by households or groups of individuals to hold or manage wealth or real estate for their owners***)				
4.1	Companies holding/managing wealth and real estate for individuals and families	Managing family trust funds, foundations, personal holding companies.	5.85, 5.97 to 5.105 and 5.172	S11, S1226, and S1227
Category V: Government owned financial units (***Those SPEs created by governments for fiscal activities***)				
5.1	SPEs owned by governments for fiscal purposes	Raising or borrowing funds on behalf of a non-resident general government.	5.94 to 5.96	S11, S12 or S15
Category VI: Other structures (***Those SPEs created to conduct any type of transactions other than those covered in the other categories***)				

Note: The types of units listed may be SPEs, but not all units of the types listed are necessarily SPEs. The SPE definition and decision tree should assist compilers in determining which units are SPEs.

3. MNEs, SPEs, and intellectual property products (IPPs)

23.43 MNEs often manage intellectual property products (IPPs), which are defined and described in further detail in chapter 11 on Capital account. MNEs increasingly establish SPEs not only to channel financial investments, but also to manage IPPs.

23.44 The intangible nature of IPPs makes the transfer and use of IPPs difficult to observe. Especially for IPP transactions within an MNE group, this non-physical feature can cause significant measurement difficulties. The main difficulty relates to identifying economic ownership (as opposed to legal ownership), which has repercussions for the treatment of related flows, especially those related to the use of IPPs. More details on determining this economic ownership can be found in the *UNECE Guide to measuring global production*.

23.45 Figure 23.5 shows a decision tree which assists in determining the economic ownership of IPPs and IPP-related transactions (including IPP-related import and export flows). The tree represents a sequence of steps, from left to right, guiding the statistics compiler to a decision. The starting point of the tree is the observation of IPP output or IPP ownership at the level of a certain unit. The obtained information is examined in four different steps:

a. Control/ownership of the unit: Does the unit participate in a global production arrangement with other members of an MNE group?

b. Did the unit produce the IPP?

c. What is the main kind of activity of the unit, or is the unit expected to use the IPP in its production process?

d. Does the unit receive revenue related to IPPs, or does the unit pay for the use of IPPs (royalties and licenses)?

23.46 Together these steps should lead to a coherent decision on ownership, the recording of capital formation and the recording of IPP-related service flows (including imports/exports). However, it should be acknowledged that the availability of information needed to go through each of these steps may be insufficient. Particularly inside MNE groups, it may be quite challenging to classify IPP-related transactions properly, identifying separately IPP funding, IPP purchases, and sales and payments for IPP use. This means that each situation identified in the decision tree includes a default solution in case information is insufficient to run properly through each of the decisive steps.

23.47 The first part of the decision tree describes the situation of units inside MNE groups. In cases where the unit produced the IPP, the observed unit may be a main producer of goods and non-IPP services (1.1.1) or a main IPP producer (1.1.2) serving the IPP needs of the various members of the MNE group. In the case of a main producer of goods and non-IPP services, the (default) decision is to assign economic ownership to the unit in question. It could be that other units inside the MNE group equally benefit from this IPP. However, in such cases, it is recommended that intra-group transactions are only recorded when data sources point at receipts for IPP use by member units.

23.48 In case of a main IPP producer, economic ownership of the produced IPP is assigned to this unit (1.1.2.2) unless there is evidence the unit does not generate any IPP-related turnover (e.g., sales of copies, licences to use), or there is evidence of sales of the original to the parent or to other customers (1.1.2.1). No observed IPP-related turnover implies the unit is indirectly funded by the parent. Without conclusive evidence, the default solution is to assign economic ownership to the producing unit (1.1.2.2).

23.49 Source statistics may indicate the use or ownership of IPPs, but without the observed unit being identified as the producer of IPPs (1.2). Unless there is evidence of purchases of IPP originals, such units will generally not be considered the economic owners of IPPs. One may expect that payments for IPP use will be observed (1.2.1.1). But even without such payments, it is quite possible that these units use IPPs provided by the MNE parent in their production processes (1.2.1.3).

23.50 However, one could also argue that since these units are obtaining the economic benefits from IPPs, they could alternatively be identified as the actual economic owners inside MNEs. This would require imputing the transfer of the IPP original from the parent to the unit and capitalization of this IPP on the balance sheet of the unit under observation. This is not an easy task, and not without risks. The nature, size, and timing of these flows are principally unknown. This is why such an approach is not recommended under 1.2.1.3.

23.51 Case 1.2.2 reflects those units created by MNE groups with the purpose of taking advantage of low-tax jurisdictions. The default solution is assigning economic ownership of the IPP to these units, in correspondence with legal ownership. Reassigning economic ownership, and corresponding revenue flows, from the legal owner to some other unit is not recommended. However, revenue received by these legal owners should preferably be shown as an "of which" item with a heading such as "IPP-related services provided by SPEs", as the provision of these services by SPEs is likely to have very little impact on employment and physical economic activity in the domestic economy. A separate reporting of these IPP services will provide a clearer view on national accounts and balance of payment statistics.

23.52 The second part of the decision tree (2) reflects the situation of global production in which a principal and a manufacturer with which it contracts are not part of a common MNE group. In appraising IPP ownership under such conditions, there are typically two situations to consider. In the first situation (2.1.1), the manufacturer owns the IPP and uses it in its production process, which implies the principal is simply obtaining a full-fledged product including the IPP service. In this case, there is no necessity of recording IPP transfers. The principal has no involvement in the manufacturing process and is expected to concentrate its business on trade-related activities. The IPP recording aspects are relatively straightforward: the manufacturer in question invests on own account in IPP and the asset value should be recorded in its balance sheet.

23.53 In the second situation, the principal owns the IPP and provides a contractor with its blueprints of the required output (2.1.2). No IPPs, or IPP-related transactions, will need to be identified when observing the contractor's production activities. The contractor will deliver a product to the principal; however, without reflecting the user costs of the IPP.

23.54 The decision tree also reflects the (perhaps hypothetical) situation in which the factoryless producer puts into use the IPPs developed by others (2.2.2.2). Such units will be IPP owners when they purchased the IPP originals. Alternatively, they could use the IPPs owned by dedicated IPP producers.

23.55 Outside the scope of MNE groups, IPP-related transactions may be observed when dedicated producers provide IPP originals or IPP-related services (2.1.2.1) to those units in the production chain engaged in manufacturing (2.2.1).

23.56 In conclusion, when IPP-related transfers occur outside the domain of MNE groups, such transfers are usually observed from market transactions, and this makes the recording much less complicated. Similarly, the identification of IPP ownership is usually more straightforward when the units involved do not belong to the same MNE group.

23.57 Yet, the analysis of IPP use in production typically requires a complete picture of the global production chain, which cannot be obtained from national statistics, such as a national input-output table. Alternatively, a worldwide input-output table may show how IPPs are linked, for example via factoryless goods producers, to the global production chain.

Figure 23.5: Decision tree for determining economic ownership of an IPP observed in global production

Control/ownership of unit	*Production of the IPP*	*Type of producer*	*Revenue and expenditure related to the IPP*	*Decision about economic ownership of the IPP*	*Related decisions*
1. The unit participates in a global production arrangement with other members of an MNE group	1.1 The unit produced the IPP	1.1.1. The unit is a main producer of other (non IPP) goods and services and is expected to use the IPP in its production process	1.1.1. The unit may, or may not, receive funding from the parent as compensation for IPP development costs but this aspect is not decisive.	Attribute by default economic ownership of the IPP to this unit	The IPP is by convention recorded on the balance sheet of this unit, even when other member units of the MNE may benefit from the IPP.
			1.1.2.1. The unit does not receive revenue from royalties or licences to use, but either receives compensation for IPP development from the parent or sells the IPP originals to the parent.	Do not attribute economic ownership to the unit. This unit serves as a dedicated IPP producer for the benefit of the MNE as a whole.	Do not record the IPP as fixed capital formation of the unit. Instead record the developed IPP as export to the (foreign) MNE parent. Reported sales of IPP originals may show up in international trade in services statistics.
		1.1.2. The unit is a main IPP producer.	1.1.2.2. The unit receives revenue from royalties or licences to use, or does not receive any compensation for IPP development from the parent, so it can be assumed that it is expected to obtain revenue from royalties and licences to use in the near future.	Attribute economic ownership to the unit. The unit functions as a dedicated IPP producer with revenue from units outside the MNE from the IPPs produced.	The IPP is recorded as fixed capital formation of the unit.

			1.2.1.1. The unit pays royalties or licences to use.	The unit does not own the IPP	Do not record the IPP as fixed capital formation of the unit. IPP service payments to foreign suppliers are recorded as import of IPP services (or royalties).
		1.2.1. The unit is a main producer of other (non IPP) goods and services and may use the IPP in production			
			1.2.1.2. The unit purchased the IPP original for use in production	Attribute economic ownership of the IPP to the unit	The IPP is fixed capital formation of the unit. If purchased from abroad register an import of the IPP (original)
	1.2. The unit did not produce the IPP				
			1.2.1.3. No IPP related payments are being observed. IPP use may be indirectly observed based on the nature of the production process (with usually high IPP requirements) and above average returns to capital.	The MNE parent is expected to be the economic owner and supplier of the IPPs used in production.	Conceptually, an imported IPP service flow should be recorded. But this is not an easy task (and not without risks) as the nature and size of these flows are principally unknown. Such imputations of imports/exports should preferably be the outcome of a concerted action in which all national statistical institutes (NSI) involved join efforts in filling in the IPP flows between the units of an MNE.
		1.2.2. The unit is not a producer of other (non IPP) goods and services. Its main output is IPP related.	1.2.2. Purchase of the IPP from the parent and revenue from royalties and licences to use may, or may not, be observed.	The unit is assumed to have purchased the IPP (original) from the parent and to receive (on behalf of the parent) revenue from royalties or licences to use the IPP. Attribute economic ownership of the IPP to the unit. The unit is considered an IPP holding SPE providing its services to the MNE parent.	It is recommended to classify the fixed capital formation, revenue and expenditure related to these IPP holding SPEs separately to allow analysis excluding "brass plate" units, also because the transactions carried by these units are not necessarily at arm's length.

Control/ownership of unit	*Production of the IPP*	*Type of producer*	*Revenue and expenditure related to the IPP*	*Decision about economic ownership of the IPP*	*Related decisions*
		2.1.1. The unit is a producer of other (non IPP) goods and services and is assumed to use the IPP in production		Attribute economic ownership of the IPP to the unit	The IPP is fixed capital formation of the unit.
	2.1. The unit produced the IPP				
			2.1.2.1. The unit receives revenue from copies, royalties or licenses to use.	Attribute economic ownership of the IPP to the unit.	The IPP is fixed capital formation of the unit. If royalty payments are received from abroad register these payments as exports of IPP services.
		2.1.2. The unit is a main IPP (or factoryless goods) producer.			
			2.1.2.2. The unit does not receive revenue from copies, royalties or licenses to use the IPP. One may assume that this unit operates as a factoryless goods producer (FGP).	Attribute economic ownership of the IPP to the unit.	The IPP is fixed capital formation of the unit.

2. The unit participates in a global production arrangement but not with affiliated units					
			2.2.1.1. The unit pays royalties or licenses to use the IPP	The unit does not own the IPP	Don't include the IPP as fixed capital formation of the unit. If payments to abroad register imports of IPP services
		2.2.1. The unit is a main producer of other (non IPP) goods and services and is expected to use the IPP in production			
			2.2.1.2. The unit purchased the IPP.	Attribute economic ownership of the IPP to the unit.	The IPP is fixed capital formation of the unit. If purchased from abroad register imports of the IPP
	2.2. The unit did not produce the IPP.				
			2.2.2.1. The unit receives revenue from royalties or licenses to use the IPP	Attribute economic ownership of the IPP to the unit	The IPP is fixed capital formation of the unit. If revenue is received from abroad register exports of IPP services
		2.2.2. The unit is a main IPP (or factoryless goods) producer.			
			2.2.2.2. The unit does not receive revenue from IPP related royalties or licenses to use. Instead, payments for IPP use (originals or copies) may be observed. This unit is expected to operate as an FGP.	The economic ownership of the IPP should be judged on the basis of the IPP related transactions observed with this unit. It is possible that the unit makes use of IPP services provided by dedicated IPP producers.	The IPP is fixed capital formation of the unit when the purchase of an original is observed. Otherwise, the unit is expected to purchase IPP services in which case royalty or license payments should be observed.

Source: UNECE *Guide to measuring global production*.

D. Measurement challenges

23.58 MNE and intra-MNE group flows present measurement challenges for the SNA, which can lead to misinterpretation or, in some cases, even mismeasurement of the related flows and stocks in the accounts. The concepts of residence and economic presence, which are central to macroeconomic statistics, assume a different relevance for MNE groups, for which activities extend across national boundaries. This has increased the complexity of compiling national statistics, as it is more difficult to break down output and value added by economy. The integrated framework of the SNA treats foreign affiliates of MNEs as residents in their respective economies of operation. This treatment is designed to allocate production to the economy in which it occurs, which is fundamental for estimating the economy's GDP and other key indicators. Furthermore, the existence of distorted transfer pricing on intra-group flows – when prices do not reflect the "arm's length" exchange values recommended for the integrated framework of the SNA – or the practice of not recording transactions for the intra-group use of intellectual property products (IPPs) may result in the misallocation of output and value added between the economy of the parent company and those of its affiliates (see also section C). Moreover, in many cases, estimates reported by MNEs in national statistical surveys may not be best suited to meet the purposes of national accounts and external sector statistics.

23.59 Although the extent of these issues is not easily quantified, the problems are significant because of the growing size and importance of MNE activities. Economic decisions made by MNEs can have a significant effect on macroeconomic statistics. When misinterpreted or mismeasured, these activities can adversely affect the quality and/or interpretation of key macroeconomic indicators. The impact on GDP might result,

for example, from the misallocation of (international) transactions in goods and services relative to income and the depreciation charges associated with movable corporate assets, especially intangible assets. Consequently, without robustly accounting for MNE group activities, the reliability of macroeconomic statistics for policymaking purposes may be challenged.

1. Allocation of activities to different economies

23.60 With complex global corporate structures and production arrangements dividing activities across many jurisdictions, there arises the issue of the subsequent allocation of these activities to different economies. MNEs are likely to try to maximize their enterprise-wide global after-tax profits rather than their profits in each of the economies in which they operate. Toward this end, they often structure the locations of their operations, the legal ownership of their assets, and the pricing of intra-enterprise transactions in ways that are designed to reduce their global tax liabilities or regulatory burdens. As a result, statistical measures based on MNEs' business records may be difficult to interpret and for certain types of analysis may even be considered to provide a distorted view of the value of the intra-enterprise transactions and the allocation of activities across economies.

23.61 MNEs can reduce their global taxes through a number of strategies, including using distorted transfer pricing between the parent and its affiliates or among the affiliates to shift profits to lower tax economies; assigning or transferring ownership of IPPs or other movable assets across economies in a manner that reduces tax burdens; interposing a finance or holding company affiliate in a low-tax economy between themselves and their affiliates; establishing offshore factoring corporations in low-tax economies that bill and collect for the parent's worldwide sales; and inverting the corporate ownership structure, with an overseas affiliate in a low-tax jurisdiction becoming the parent that collects net income for the MNE's worldwide corporate structure. As explained in chapter 4 on Flows, stocks and accounting rules, transfer prices may be distorted – that is, incompatible with the valuation principles used in the integrated framework of the SNA – in which case they should preferably be adjusted to actually observed market prices. However, because of all the complexities involved to arrive at a consistent recording of the adjustments, national accounts and external accounts often refrain from trying to approximate true market prices (see paragraphs 4.147 to 4.150).

23.62 The use of finance or holding company affiliates, factoring corporations, and corporate inversions are not necessarily inconsistent with the principles used in the system, but they may lead to difficulties in compiling and reconciling the statistics and in interpreting the flows reported by the accounts. Complex financing and ownership structures of MNEs can mask ultimate ownership links and inflate (foreign) direct investment flows and positions as each flow into and out of each economy is counted even if the funds, or income, are just passing through. Compilers can provide additional breakdowns to show, for example, the effects of any adjustments made to transfer prices (or of the potential effects of not being able to adjust transfer prices to the "arm's length" exchange values) or of other factors that lead to multinational profits that are not reflected in measured income in the domestic economy. The macroeconomic indicators and supplementary information discussed in section E of this chapter can also help to address misinterpretation of the accounts, including by distinguishing between domestically and foreign-controlled corporations.

2. Cross-border mobility of corporate assets

23.63 Cross-border mobility of movable corporate assets, including intangible assets such as IPPs, can make the true location of the generation of value added and profits ambiguous. Because IPPs are not physically constrained and the use of an IPP by one part of an MNE group does not prevent the simultaneous use by another part, the MNE can potentially register a previously produced IPP in another economy to maximize the MNE group's overall post-tax profits.

23.64 Determining economic ownership of IPPs potentially has a major effect on the recording of assets and related flows and stocks in macroeconomic statistics. The creation of IPP assets at one location in an MNE group is quite often funded by affiliates elsewhere in the group. These arrangements are known as cost sharing agreements where the costs associated with research at one location are funded by a number of affiliates across the group.

23.65 Section C of this chapter and figure 23.5 describe the decision tree that should be used to determine the economic ownership of IPPs. It should be emphasized, however, that the measurement of the IPP-related flows and stocks within an MNE group, such as recording the sale or transfer of IPP assets or the payment of royalties based on reported transfer prices, could significantly bias the flows shown in the accounts relative to the discounted present value of expected future returns, which unfortunately may not always be available to the compiler. Also, if faulty data are used in implementing the decision tree for determining economic ownership, ownership of IPPs could be attributed to the wrong economy, which would lead to distortions in GDP and other macroeconomic indicators. Furthermore, even when the data underlying the determination of economic ownership and the measurement of IPP flows and stocks are correct, in some cases the resulting flows and stocks could be surprising to data users and might be inappropriate for certain types of analysis. For example, if a large MNE that produces software originals transfers the ownership of the originals to a low-tax economy, and the global sales of copies of the software are routed through the low-tax economy, this economy could show high value added in software copies with very little associated labour input and remuneration of employees. Some users of the GDP statistics for that economy might consider the statistics to be distorted, or at least to be difficult to interpret in the context of typical business cycle analysis that assumes a strong relationship between GDP and aggregate labour input. Moreover, the transfer of the originals themselves may pose challenges to the interpretation of exports/imports and capital formation. If practical, the identification within exports/imports and capital formation of transfers of previously produced IPPs contributes to understanding the role of those transactions in GDP and components.

3. Consistency and coherence of MNE group data

23.66 Ensuring that all activity of an MNE group is captured, not duplicated, and properly allocated by economic territory is a statistical challenge since the integrated framework of the SNA does not view the MNE group as a single unit. If not properly recorded, the activities of MNE groups could result in a misallocation of GDP and, as a result, could distort an economy's macroeconomic indicators.

23.67 Inconsistent recording of some transactions of MNE groups can lead to large discrepancies in the accounts. Various data sources used in the compilation of statistics may use different statistical units or definitions and may record flows and positions in different ways, making it difficult for the compiler to achieve consistency in the measurement of economic activity. Compilers in some national statistical offices have addressed these issues by focusing attention on large MNEs, endeavouring to coordinate the collection of data from the MNE group, tracking changes in the composition of the group, and conducting coherence analysis to ensure that the data are consistent. The successful pursuit of this strategy requires monitoring and understanding of the business activities of the MNE group, as well as maintaining good communication with representatives of the group. In several countries, these tasks are carried out by specific organizational units, combining the expertise of national accountants, balance of payments experts, and business accountants. Where confidentiality rules allow for it, compilers are also encouraged to exchange source data and reconcile the activities of MNE groups with their counterparts in other economies (see paragraph 21.51).

E. Macroeconomic indicators and supplementary information to monitor the impact of globalization

1. Existing macroeconomic indicators

Key indicators other than GDP

23.68 Traditionally, analysis of economic activity within an economy focused on GDP as a broadly defined, internationally consistent measure of productive activity. Considering various economic developments, including increased globalization, the integrated framework of the SNA has given increased prominence to other key indicators, such as net domestic product (NDP), gross/net national income (GNI/NNI), gross/net national disposable income (GNDI/NNDI), and household (adjusted) disposable income. These indicators are generally less affected by globalization and less sensitive to the impact of MNE activities than GDP. This is an important factor to consider, especially for economies with significant MNE presence. As such, indicators other than GDP may better reflect the impact of the underlying economic activities of MNEs on

an economy's residents.

23.69 To illustrate these differences, consider a direct investment affiliate that is wholly owned by a foreign parent and is engaged in capital-intensive production. Because the production process is capital-intensive, most of the value added accrues as operating surplus to the foreign parents, perhaps primarily as reinvested earnings on foreign direct investment, whereas only a relatively small part of the value added remains in the domestic economy as remuneration of employees. Similarly, if an MNE engages in distorted transfer pricing to boost the income of an affiliate in a lower tax economy and it is not possible to replace the distorted transfer prices with the "arm's length" exchange values in the compilation of the accounts, the transfer pricing will have less effect on GNI than on GDP. In both cases, comparing GDP with GNI, GDP includes the full value added, whereas GNI excludes the property income that accrues to foreign investors, whether in the form of dividends or interest that are repatriated to the parent or in the form of reinvested earnings on foreign direct investment. The GNI comes closer to measuring the economic flows that are retained by the economy's residents.

23.70 Similarly, net measures such as net national income (NNI) will tend to better capture the impact of MNE activities on domestic residents than the gross measure. For example, consider an economy to which an MNE relocates a large amount of IPPs. The IPP generates on-going production and income in the form of royalties or license fees, which directly feed into the measurement of GDP. GNI excludes the property income that accrues to foreign investors, but NNI goes one step further by also excluding the depreciation that is associated with the IPP.

23.71 When current transfers represent a large share of an economy's income, net national disposable income (NNDI) can provide a better measure of the income available to residents for consumption or saving. Furthermore, when interest is focused primarily on the material well-being of households, indicators such as net household disposable income, either adjusted or not for social transfers in kind, may provide the best summary of economic conditions. The latter indicators are hardly affected by the activities of MNE groups; basically, only the remuneration from being employed by the domestic affiliates of the MNE group feeds into household (adjusted) disposable income.

2. Supplementary data

Additional granularity in the institutional sector accounts

23.72 The institutional sector accounts show the full sequence of economic accounts from output and value added to net lending and borrowing, the financial account, the other changes in assets and liabilities accounts, and the resulting balance sheets for institutional sectors. Adding granularity to these accounts based on ultimate control and ownership of corporations can highlight the full impact of MNE activities in the macroeconomic accounts and highlight not only foreign-controlled enterprises but also the domestic enterprises that are part of MNE groups. Because of the data intensity involved, it is recommended that the increased granularity be limited to the non-financial corporations' sector and the financial corporations' sector, and that the breakdown of MNE groups is not needed for any subsector.

23.73 For economies for which SPEs have a significant presence, it is recommended that SPEs be separately identified as "of which" items within the institutional sector accounts. Separate identification of SPEs is important for better understanding the contribution of SPEs from both the national and external accounts perspective. For economies for which SPEs are significant, it is recommended that the SPEs are separately identified as a supplementary "of which" item for foreign-controlled financial and non-financial corporations.

23.74 Table 5.1 provide a template for the breakdown of the non-financial and financial corporations' sector by domestic multinational corporations and foreign-controlled corporations as well as "of which" categories for SPEs.

Supplementary presentation of trade and investment income

23.75 To develop indicators on global value chains (GVCs) and to better identify the role of MNEs in current account international transactions, a supplementary presentation of international trade and investment income by characteristics of the enterprise, including ownership (e.g., domestically controlled or foreign-controlled)

and size, is recommended. These indicators are not only useful for understanding international transactions by characteristics of the enterprise, but also for national accounts more generally, such as for the extended supply and use tables discussed in paragraphs 23.80 to 23.82.

23.76 Economies are encouraged to compile data on international goods trade-by-enterprise characteristics (TEC) as well as international services-trade-by enterprise characteristics (STEC). Many economies have added information on whether the enterprise is foreign or domestically owned to their TEC and STEC statistics. These statistics can answer questions such as: What kind of enterprises are behind the international trade flows of goods and services? What is the share of small and medium-sized enterprises in total international trade? What is the share of enterprises that trade with a certain partner economy and the amount of trade value they account for? These statistics can also enable compilers to prepare a supplementary presentation that disaggregates exports and imports of goods and services and external flows of investment income broken down by ownership, size-class of enterprises, trading partner, product, and industry.

23.77 Table 23.2 provides a template for this supplementary presentation. The main breakdown is by domestic versus foreign ultimate control. The template also calls for the identification of small and medium-sized enterprises (SMEs) that employ fewer than a threshold of a given number of employees. Many economies use the threshold of less than 250 employees. This threshold is encouraged to enhance international comparability, but other thresholds could also be considered. In cases where the underlying data are not collected or available at the enterprise level (for example, imports of goods or services by individuals), the transactions should be reported as "Unknown". It will be beneficial to further divide SMEs into independent SMEs (i.e., not a part of a group) and those that are part of a group to try to identify the SMEs that might benefit from inputs of affiliated parties.

23.78 While the template represents a recommended level of disaggregation, some economies may be able to provide further disaggregation along certain dimensions, whereas in other cases economies may not be able to provide the recommended level of disaggregation because of their own confidentiality criteria for disseminating the information or lack of detailed data. Whatever the case, the most economically relevant breakdown possible should be considered when publishing these statistics.

Table 23.2: Template to identify the role of enterprise characteristics in the current account

	Total	By trading partner		By product		By industry	
		Each of top 5 partners	Rest of the world	Each of top 5 products	The other products	Each of top 5 industries	The other industries
TEC Balance of payments statistics							
1.A Export of goods and services							
Export of goods and services, total							
1.A.a Goods							
By enterprise's ownership							
Domestically controlled							
MNE							
Other							
Controlled from abroad							
Unknown							
By enterprise's size							
SME							
Independent							
Part of a group							
Large enterprises							
Unknown							
1.A.b Services							
By enterprise's ownership							
Domestically controlled							
MNE							
Other							
Controlled from abroad							
Unknown							

By enterprise's size SME Independent Part of a group Large enterprises Unknown 1.B.2 Receipts of investment income By enterprise's ownership Domestically controlled MNE Other Controlled from abroad Unknown By enterprise's size SME Independent Part of a group Large enterprises Unknown				
1.A Import of goods and services Import of goods and services, total 1.A.a Goods By enterprise's ownership Domestically controlled MNE Other Controlled from abroad Unknown By enterprise's size SME Independent Part of a group Large enterprises Unknown 1.A.b Services By enterprise's ownership Domestically controlled MNE Other Controlled from abroad Unknown By enterprise's size SME Independent Part of a group Large enterprises Unknown 1.B.2 Expenditures of investment income By enterprise's ownership Domestically controlled MNE Other Controlled from abroad Unknown By enterprise's size SME Independent Part of a group Large enterprises Unknown				

Other supplementary statistics on international trade in goods and services

23.79 Detailed statistics on imports and exports may also be useful for the analysis of GVCs. In particular, reporting of the following items is encouraged: total value of re-exports and main product and/or partner breakdown; total value of goods acquired or sold under merchanting and the main products and/or major trading partners; a reconciliation table between international merchandise trade statistics and international trade in goods statistics; product and partner breakdown of total international trade in goods in line with the recording in the integrated frameork of the SNA as well as a geographical breakdown of the main services categories.

Extended supply and use tables

23.80 Extended supply and use tables (ESUTs) are extended tables designed to provide more granularity regarding transactions associated with globalized production arrangements in a flexible manner that allows for a number of possible extensions. This additional granularity can support the compilation of Trade in Value Added (TiVA) and GVC thematic accounts. Extensions may include breakdowns by firm such as by size-class of firm, trading status (e.g., export orientation), or control (e.g., foreign controlled or domestic units that are part of an MNE group). The details on control may be identified by international affiliate statistics or MNE surveys. Other possible extensions may include links to the generation of earned income accounts, labour input statistics, and greenhouse gas emissions.

23.81 Various ESUT extensions can capture important differences in the input and output structure of different producers in the same industry that are absent from conventional supply and use tables and input-output tables. Under the ESUT approach, as with other extended tables and thematic accounts, economies can implement them according to their own priorities and resources in a way that is most relevant to their specific needs, circumstances, and data availability. The objective of ESUTs is to create an integrated accounting framework that can link disparate data sources such as structural business statistics, trade-by-enterprise characteristics (TEC and STEC), foreign affiliate statistics, and international trade data in a coherent framework. The ESUTs should be parsimonious in construction – that is, it is not necessary to break down all activities into more homogeneous groups. Like the GVC thematic accounts, the ESUTs may only focus on selected activities. Compilers can focus on the industries and/or products where extra granularity is needed in the context of analysing their economy. If there is no foreign presence in a given industry, then there is no need to add granularity.

23.82 The data collected for the supplementary presentation of trade and investment income described in paragraphs 15.46 to 15.49 of *BPM7* can help improve the quality of ESUTs, GVC thematic accounts, and TiVA estimates. ESUTs build on national supply and use tables and input-output tables through the integration of more detailed data provided via MNE surveys, surveys for the balance of payments purposes, tax data, integrated business statistics, and reconciled international trade statistics, among others. The ESUTs provide a holistic, integrated view to better understand the complexities and interactions in measuring the effects of globalization on production processes. They can also serve as useful and important inputs in the compilation of TiVA statistics and GVC thematic accounts. Detailed discussions and recommendations for ESUTs, and for extended input-output tables EIOTs, can be found in the *Handbook on Extended Supply and Use Tables and Extended Input-Output Tables.*

3. Alternative presentations

Alternative presentation of reclassified special purpose entities

23.83 Economies for which SPEs are deemed to be especially important are encouraged to consider a voluntary option of extending the sequence of economic accounts by compiling a supplementary presentation of SPEs reclassified from their economies of legal incorporation to the economies of their parents. Although this alternative presentation is outside the scope of the integrated framework of the SNA, it would allow users to see the effects of consolidating the flows of SPEs with the other flows of parents, giving users an idea of the effects of pass-through flows within MNE groups on core macroeconomic indicators. Presenting SPE statistics on a nationality basis would be a complement to the residency-based statistics and not a substitute. Compiling these supplementary statistics should be considered only for economies for which SPEs are

deemed important, particularly where resident MNEs set up many foreign SPEs or non-resident MNEs set up many resident SPEs. This supplementary approach of compiling macroeconomic aggregates is considered too ambitious and resource intensive to implement consistently across economies in which SPEs are not deemed important. Arriving at consistent high-quality estimates would also require significant exchange of source data between countries, which may be hampered by confidentiality rules.

4. Statistics on the activities of multinational enterprise (MNE) groups

23.84 To complement statistics on foreign direct investment and other globalization indicators, information on foreign-controlled enterprises is also provided through statistics on the Activities of Multinational Enterprises (AMNE statistics) and the closely related Foreign Affiliates Trade Statistics (FATS). AMNE statistics cover a range of variables on foreign direct investment enterprises. This wider dataset is compiled separately from balance of payments and international investment position statistics (although the data may be collected in the framework of compiling foreign direct investment), as the data relate to the overall holdings and activities of foreign direct investment enterprises rather than just the direct interrelations by them with related enterprises. That is, the objective of AMNE statistics is to provide an additional perspective on the impact of foreign direct investment that is complementary to data on international flows and positions. FATS are a subset of AMNE statistics and do not cover the affiliates' ultimate controlling parents.

23.85 AMNE statistics cover those foreign direct investment enterprises in which the direct investor (or a group of investors in combination) directly or indirectly holds or controls a majority of the voting power (i.e., subsidiaries). This coincides with the scope of foreign controlled corporations in the integrated framework of the SNA but differs from the scope of foreign direct investment enterprises due to the exclusion of associates.

23.86 For statistics on foreign-controlled enterprises in the compiling economy (inward AMNE statistics), the geographical attribution should be by the economy of the ultimate controlling parent. However, to facilitate links with foreign direct investment data, compilers are encouraged to also provide some data in which attribution is based on the economy of the immediate investor (that is, the first foreign parent). Statistics for non-resident enterprises controlled by foreign direct investors resident in the compiling economy (outward AMNE statistics) should be attributed based on the location of the enterprises whose activities are being described. Ideally, all AMNE variables should be attributed on the basis of the industrial activities of the establishment or enterprise, according to the *International Standard Industrial Classification of All Economic Activities (ISIC)*. In addition, particular variables such as sales or output, exports, and imports may be attributed by the types of products produced and sold.

F. Analytical tools

23.87 The parts and components that make up a final product, whether a good or a service, are increasingly produced in different economies. Therefore, intermediate goods and associated services may cross national borders several times before they are assembled and sold as a final product. Moreover, international trade in goods and services is often intra-group trade, organized and led by MNEs.

23.88 Policy demand for more statistical information on GVCs has grown significantly over recent years. Production fragmentation has deepened the divergence between gross flows, as recorded by traditional international trade statistics, and the data on production and final demand as accounted for in the integrated framework of national accounts. This section introduces analytical tools that have been developed to better understand the relationship between globalization and the domestic economy.

Trade in Value Added indicators

23.89 International trade flows are generally reported on a bilateral gross basis – that is, an economy will report its exports and imports with each of its trading partners each time a change of ownership occurs. When the production process is fragmented across multiple economies, these bilateral gross trade flows taken by themselves may present a distorted view of the ultimate location of production.

23.90 Consider the example shown in figure 23.6. Country A exports goods produced entirely within A, to Country B, which further processes them before exporting them to Country C where they are consumed. The value added of A is 100 (the same as the value of the exports), and B adds value of 10 to the goods, thus exporting 110 to C. Trade statistics show total global exports and imports of 210, but only 110 of value added has been generated in their production. The bilateral gross flows show C importing 110 from B and no trade at all with A, even though A is the main source of value added in the goods that C is importing from B. Note that C's trade deficit with the world is 110, and the gross trade flows suggest that the deficit is entirely due to its trade with B, even though most of the income associated with the imports of the good ultimately flow to A. The bilateral gross trade flows and any deficit or surplus associated with those flows are likely to provide a misleading picture of the location of production and the ultimate benefits or harms resulting from international trade.

Figure 23.6: Inflated gross flows of trade

Source: UNECE *Guide to measuring global production*.

23.91 Several handbooks, guides, and statistics have been published since 2010 to better address the statistical challenges in understanding the nature of global production, such as OECD *Guide to OECD's Trade in Value Added Indicators: 2023 Edition*. The Trade in Value Added (TiVA) approach addresses the double counting implicit in gross flows of international trade. TiVA measures the value that is added by each economy and industry in the production of goods and services that are traded and consumed worldwide.

23.92 The TiVA information thus incorporates information about the entire global value chain, providing information that policy makers can use to understand the global effects of their economy's foreign trade flows, potentially impacting policies regarding the effects of international trade on growth and competitiveness, global imbalances, macroeconomic shocks, labour, and the environment.

23.93 The TiVA measurement model involves compiling a multi-country input-output table, which combines national supply and use tables with trade statistics. The worldwide input-output table enables the tracking of exports of one economy that are used as intermediate consumption in an industry of a second economy. The worldwide input-output table also includes columns that record the final demand in each economy and rows that record taxes less subsidies on products, value added at basic prices, and output for each industry in each economy (see chapter 36 on Input-output tables for more information on multi-country input-output tables).

23.94 Among the key indicators provided by the TiVA statistics are the domestic content of an economy's exports (that is, the domestic value added of exports as a percentage of total gross exports), a decomposition of an economy's gross exports by source economy in value added terms, and a similar decomposition of an economy's gross imports by source economy in value added terms. It is also possible to decompose the value added content of exports by value added generated by the production of goods and the value added generated by the production of services. Finally, these decompositions often also show that a portion of the value added of imported intermediate goods reflects an economy's own domestic value added (from an earlier stage in the global value chain) that has "returned" to the economy.

23.95 Granular TiVA statistics can be computed using ESUTs and EIOTs (see paragraphs 23.80 to 23.82). Because TiVA estimates rely on supply and use (or input-output) tables from multiple economies, they have generally been compiled by international or regional organisations. Nevertheless, national statistics are the ultimate

source of the data used in their compilation, and international cooperation is required in providing the data at the required level of detail. Where sufficiently detailed data are not available, the compiler necessarily has to make several assumptions. Efforts to improve the quality of national data on global value chains has also contributed to the following analytical tool, the global value chain thematic account.

Global value chain thematic account

23.96 Global Value Chains (GVCs), coordinated and headed by lead firms, represent interlinked core production activities and supporting activities to produce a final product. GVCs consist of the full range of activities that firms and workers do to bring a product from its conception to its end use. This includes activities such as research and development, production, transportation and distribution, marketing and sales, and after-sales services to the final consumer. While one cannot fully see the activities of GVCs in conventional national accounts statistics, a GVC thematic account uses a bottom-up approach that looks at a specific production chain within the integrated framework of national accounts.

23.97 The United Nations Handbook *Accounting for Global Value Chains: GVC Satellite Accounts and Integrated Business Statistics* highlights the role of a GVC thematic account approach that can be used to identify and articulate a GVC for a specific product or group of products produced within a GVC. The GVC thematic account consists of GVC-specific supply and use tables (SUTs), either national or multi-country, based on an enterprise-centred approach. It combines integrated and more detailed business statistics and information on business lines and functions and GVC-specific institutional sector accounts. Accordingly, it includes production, including the income generated and the labour input used in this production, investment income, and acquisitions, less disposals, of both non-financial and financial assets, as well as the resulting balance sheets. This level of detail is not readily available in the existing accounting presentation at the level of sectors or sub-sectors that contain the activities of significant GVCs in an economy.

23.98 National (or multi-country) GVC-specific accounts would be compiled from national supply and use tables. The scope of the GVC and the identification of the firms participating in the supply chain of the GVC must first be determined by the compilers. The integration of information starts from the compilation of national supply and use tables with a common breakdown of industries and products. The breakdown at industry level explicitly identifies the relevant *International Standard Industrial Classification (ISIC)* divisions and groups for the GVC. Similarly, the breakdown at the product level explicitly identifies the GVC-relevant products. However, there are significant additions required for a comprehensive GVC analysis as outlined in the United Nations Handbook.

23.99 A global enterprise can organize its core production activities (production of goods and services to be sold in the market) in a number of different business lines. Such an enterprise could be a lead firm for various GVCs in different specific industries. Therefore, business, trade, and investment data for a GVC thematic account would need to be collected from the business line of a global enterprise to allow for the correct data specification of the industry-specific GVCs controlled by the lead firm. The enterprise or enterprise group would be able to delineate the statistical units in each of its business lines and further by each business function. The activities of the lead firm are recorded in the country of its residence. In addition, in order to reflect the governance structure in the supply and use tables, there should be a further breakdown of the firms in the ISIC categories that correspond with the business functions of a GVC undertaken in the economic territory to reflect if the firm is foreign controlled or nationally controlled and if the firm is part of the GVC or not.

23.100 In a similar way, the list of standardized products explicitly identified in the GVC-specific accounts reflects the GVC-related products which include the final product of the GVC and the intermediate goods and services that are used to produce the final product. Finally, because of the multi-country nature of the GVCs, the international trade of these products between the GVC partner countries would also be explicitly shown.

23.101 The GVC thematic accounting framework is a flexible approach that can be implemented depending on an economy's needs and interests without overburdening or reducing the accuracy or consistency of the relevant data in the integrated framework of national accounts. In other words, GVC thematic accounts may focus on a single country or, preferably, expand to multi-country accounts with major GVC partners. Flexibility also applies in choosing one or more industries to focus on, with the selection based on the economic importance

or dominance of the industry in the domestic economy and partner country markets. Moreover, GVC thematic accounts may comprise only one or several GVC-specific supply and use tables of interest, but preferably it will also include the GVC-specific institutional sector accounts.

Chapter 24: Insurance and pensions

24.1 This chapter provides an overview of insurance and pensions. Sections A to F are concerned with direct insurance and reinsurance. They attempt to bring together all the entries in the accounts connected with non-life and life insurance and explain their interconnection. Sections G to K deal with pension and non-pension benefits under social insurance schemes.

A. Introduction to non-life insurance, life insurance and reinsurance

24.2 At its simplest, an insurance policy is an agreement between an insurance corporation and another institutional unit, called the policyholder. Under the agreement, the policyholder makes a payment (a premium) to the insurance corporation and, if or when a specified event occurs, the insurance corporation makes a payment (claim) to the policyholder. In this way, the policyholder protects itself against certain forms of risk; by pooling the risks the insurance corporation aims to receive more from the receipt of premiums than it has to pay out as claims. However, simply recording the actual premiums and claims paid in the sequence of economic accounts of the SNA would not reflect the links between premiums and claims. Instead, some actual transactions are partitioned and others are imputed in order to bring out the underlying economic processes actually taking place.

24.3 The most common form of insurance is called direct insurance whereby the policy is issued by an insurance corporation to another type of institutional unit, but an important form of insurance is provided by one insurance corporation to another insurance corporation. This latter sort of insurance is called reinsurance.

24.4 Defining some of the terms peculiar to the insurance industry is a helpful preliminary to further discussion. For non-life and life insurance, the term premiums is used for payments to the insurance corporation; payments by the insurance corporation are called claims in the case of non-life policies and benefits in the case of life policies. The actual premium is the actual amount payable to the direct insurer or reinsurer to secure insurance cover for a specific event over a stated time period. Actual premiums are measured by the amounts payable after all allowances, discounts or bonuses are taken into account. Cover is frequently provided for one year at a time with the premium due to be paid at the outset though cover may be provided for shorter (or longer) periods and the premium may be payable in instalments, for example monthly.

24.5 The actual premium earned is the part of the actual premium that relates to cover provided in the accounting period. For example, if an annual policy with a premium of 120 units comes into force on April 1 and accounts are being prepared for a calendar year, the premium earned in the calendar year is 90. The unearned actual premium is the amount of the actual premium received that relates to the period past the accounting point. In the example just given, at the end of the accounting period there will be an unearned premium of 30, intended to provide cover for the first three months of the next year. A claim (benefit) is the amount payable to the policyholder by the direct insurer or reinsurer in respect of an event covered by the policy occurring in the period for which the policy is valid. Claims generally become due when the event occurs, even if the payment is made some time later. (The exception to the general rule is described in section C.) Claims that become due are described as claims incurred. In some contested cases the delay between the occurrence of the event giving rise to the claim and the settlement of the claim may be several years. Claims outstanding cover claims that have not been reported, have been reported but are not yet settled or have been both reported and settled but not yet paid.

1. Direct insurance

24.6 There are two types of direct insurance, life and non-life insurance. ***Life insurance is an activity whereby a policyholder makes regular payments to an insurer in return for which the insurer guarantees to provide the policyholder (or in some cases another nominated person) with an agreed sum, or an annuity, at a given date or earlier if the policyholder dies beforehand. It excludes term life insurance.*** The sum payable under the policy (benefit) may be fixed or may vary to reflect the income earned from the investment of premiums during the period for which the policy operates. For policies with varying returns, the terms "with-profits" life insurance or endowment policy are generally used. Although the date and sum may be variable, a claim is always paid in respect of a life policy. ***Non-life insurance*** is an activity similar to life insurance except that it ***is an insurance***

providing cover to the policyholder against loss or damage suffered as a result of accidents, sickness, fire, etc. It also includes term life insurance. As noted, a policy that provides a benefit in the case of death within a given period but in no other circumstances, usually called term (life) insurance, is regarded as non-life insurance because, as with other non-life insurance, a claim is payable only if a specified contingency occurs and not otherwise. In practice, because of the way in which insurance corporations keep their accounts, it may not always be possible to separate term (life) insurance from other life insurance. In these circumstances, term (life) insurance may have to be treated in the same way as life insurance for purely practical reasons.

24.7 What life and non-life insurance have in common is that they both involve spreading risk. Insurers receive many (relatively) small regular payments of premiums from policyholders and pay much larger sums to claimants when the contingencies covered by the policy occur. For non-life insurance, the risks are spread over the whole population that takes out the insurance policies. For example, an insurance corporation determines the premiums charged for vehicle insurance in a year by relating them to the amount of claims it expects to pay on vehicle insurance in the same year. Typically, the number of claimants is much smaller than the number of policyholders. For an individual non-life policyholder there is no relationship between the premiums paid and the claims received, even in the long run, but the insurance corporation establishes such a relationship for every class of non-life insurance on a yearly basis. For life insurance, a relationship between premiums and claims over time is important both to the policyholders and to the insurance corporation. For someone taking out a life policy, the benefits to be received are expected to be at least as great as the premiums paid up until the benefit is due and can be seen as a form of saving. The insurance corporation must combine this aspect of a single policy with the actuarial calculations about the insured population concerning life expectancy (including the risks of fatal accidents) when determining the relationship between the levels of premiums and benefits. Further, in the interval between the receipt of premiums and the payment of benefits, the insurance corporation earns income from investing the premiums received. This income also affects the levels of premiums and benefits set by the insurance corporations.

24.8 Despite the similarity of the activity of life and non-life insurance, there are significant differences between them that lead to different types of entries in the sequence of economic accounts of the SNA. Non-life insurance consists of redistribution in the current period between all policyholders and a few claimants. Life insurance mainly redistributes premiums paid over a period of time as benefits paid later to the same policyholder. Essentially life insurance premiums and benefits are financial transactions and not current transactions.

24.9 One way in which a regular income stream can be obtained in return for an upfront payment of a lump sum is via an annuity. Annuities are usually offered by life insurance corporations and so a discussion of the recording for annuities in the sequence of economic accounts is given at the end of this part.

24.10 In some countries, one can observe hybrid insurance products that are a mixture of life and non-life insurance. These products should be allocated to one category or the other depending on which features are predominant, with the proportion of premiums allocated to claims for insured events (non-life insurance) versus the proportion of premiums allocated to payouts at maturity (life insurance) to be used to determine the allocation.

2. Reinsurance

24.11 Just as an individual institutional unit protects itself against the financial consequences of loss or damage, so an insurance corporation may also protect itself against an unexpectedly large number of claims, or exceptionally heavy claims, by taking out a reinsurance policy with another insurance corporation. All insurance corporations may take out some form of reinsurance but there tend to be a few large corporations that specialize in issuing reinsurance policies. Because these corporations are concentrated in a few financial centres, many of the flows associated with reinsurance involve transactions with the rest of the world. It is common for reinsurers to take out reinsurance policies with other insurance corporations to spread their risks further. This sort of reinsurance is called retrocession.

24.12 Reinsurance policies are most common for non-life insurance policies but may also apply to life insurance policies. There are two types of reinsurance, proportionate reinsurance and excess of loss reinsurance. Under a proportionate reinsurance contract, the reinsurer accepts an agreed proportion of the risks; this proportion of the premiums is "ceded" to the reinsurer who then meets the same proportion of the claims. In this case, any reinsurance commission paid by the reinsurer to the policyholder (either a direct insurer or another reinsurer) is

treated as a reduction in actual reinsurance premiums payable. In excess of loss reinsurance, the reinsurer undertakes to pay all losses over a given threshold. If there are no or few claims above the threshold, the reinsurer may pass a share of his profits to the direct insurer. By convention, profit-sharing is treated as a current transfer from the reinsurer to the direct insurer in a way similar to the payment of claims.

3. The units involved

24.13 The institutional units involved in direct insurance and reinsurance are pre-eminently insurance corporations. In principle it is possible for another type of enterprise to carry out insurance as a non-principal activity, but usually the legal regulations surrounding the conduct of insurance mean that a separate set of accounts covering all aspects of the insurance activity must be kept; thus in the sequence of economic accounts a separate institutional unit, classified to the insurance corporations subsector, is identifiable. Sometimes government may conduct other insurance activities, but again it is likely that a separate unit can be identified. Having noted that exceptionally other sectors may be involved, in what follows it is assumed that all insurance is carried out by insurance corporations, either resident or non-resident.

B. Output of direct insurance and reinsurance

24.14 Under a non-life insurance policy, the insurance company accepts a premium from a client and holds it until a claim is made or the period of the insurance expires. In the meantime, the insurance company invests the premium and the investment income is an extra source of funds from which to meet any claim due. The investment income represents income foregone by the client and so is treated as an implicit supplement to the actual premium. The insurance company sets the level of the actual premiums to be such that the sum of the actual premiums plus the investment income earned on them less the expected claim will leave a margin that the insurance company can retain; this margin represents the output of the insurance company. Within the integrated framework of the SNA, the output of the insurance industry is determined in a manner intended to mimic the premium setting policies of the insurance corporations. To that end, four separate items need to be defined. These are actual premiums earned, premium supplements, claims (or benefits) incurred and reserves. Each of these is discussed in turn before discussing the measurement of output for direct non-life insurance, direct life insurance and reinsurance respectively.

1. Actual premiums earned

24.15 As explained in section A, an important distinction is made between actual premiums, which are payable for cover in a given period and actual premiums earned that are the proportion of actual premiums, relating to the accounting period in question rather than to the period covered by the insurance policy.

2. Premium supplements

24.16 For life insurance in particular, but also to a lesser extent for non-life insurance, the total amount of claims payable in a given period often exceeds the premiums receivable. The insurance corporation can accept this because the contingencies covered by the policies do not occur, even for the whole population covered, at the same time as the premiums are paid. Premiums are usually paid regularly, often at the start of an insurance period, whereas claims fall due later, in the case of life insurance often many years later. In the time between the premium being paid and the claim being payable, the sum involved is at the disposal of the insurance corporation to invest and earn income from it. These amounts are called reserves. The income earned on the reserves allows the insurance corporations to charge lower premiums than would be the case otherwise. An adequate measure of the service provided must take account of the size of this income as well as the relative size of premiums and claims.

24.17 The income concerned comes from the investment of the reserves of the insurance corporations, which represent liabilities towards the policyholders. For non-life insurance, even though a premium may be payable at the start of a period of cover, the premiums are only earned on a continuous basis as the period passes. At any point before the end of the cover, the insurance corporation holds an amount due to the policyholder relating to services and

possible claims to be provided in the future. This is a form of credit extended by the policyholder to the insurance corporation described as actual unearned premiums. Similarly, although claims become due for payment by the insurance corporation when the contingency specified in the policy eventuates, they may not be actually payable until some time later, often because of negotiation about the amounts due. This is another similar form of credit, described as reserves against claims outstanding.

24.18 Similar reserves exist for life insurance but in addition there are two other elements of insurance reserves, actuarial reserves for life insurance and reserves for with-profit insurance. They represent amounts set aside for payments of benefits in future. Usually the reserves are invested in financial assets and the income is in the form of investment income (interest and dividends). Sometimes, however, they may be used to generate net operating surplus either in a separate establishment or as a secondary activity. The most common example is from real estate.

24.19 It is common with life insurance policies for amounts to be explicitly attributed by the insurance corporation to the policyholders in each year. These sums are often described as bonuses. The sums involved are not actually paid to the policyholders but the liabilities of the insurance corporation towards the policyholders increase by this amount. This amount is shown as investment income attributed to the policyholders. The fact that some of it may derive from holding gains does not change this designation; as far as the policyholders are concerned it is the return for making the financial asset available to the insurance corporation.

24.20 All investment income attributable to policyholders, whether explicitly by the insurance corporation or implicitly within the integrated framework of the SNA, is shown as payable to the policyholders in the allocation of earned income account. For non-life insurance, the same amount is then repaid to the insurance corporation as premium supplements in the income transfers other than social transfers in kind account. For life insurance, premiums and premium supplements as well as benefits are shown in the financial account.

24.21 For direct non-life insurance, the investment income attributed to the policyholders should, in principle, be made according to the proportion of reserves attributed to the different classes of insurance and policyholders. In practice, the usual method is to distribute the investment income in proportion to the actual premiums payable. For direct life insurance, all policyholders are individuals and so the investment income is attributed to households (possibly including some non-resident households).

3. Claims and benefits

Non-life insurance claims

24.22 The level of claims made on non-life insurance policies varies from year to year and there may be exceptional events that cause a particularly high level of claims. However, the concept of insurance service is the service of providing cover against risk; production occurs continuously and not simply when the risk occurs. As such, its measurement should not be affected by the volatility of the occurrence of the risk. Neither the volume nor the price of insurance services is directly affected by the volatility of claims. The insurance company sets the level of premiums on the basis of its own estimation of the likelihood of claims. For this reason, the formula used in the integrated framework of national accounts for the calculation of output should not use actual claims but a figure based on past experience and future expectations. The term “adjusted claims” is used to describe the level of claims used in determining the value of output.

24.23 The figure for adjusted claims may be derived statistically in an expectations approach based on previous experience of the level of claims. In considering the past history of claims payable, however, allowance must be made for the share of these claims that are met under the terms of the direct insurer’s reinsurance policy (if any). For example, when the direct insurer has an excess of loss reinsurance, he sets the level of premiums to cover losses up to the maximum loss covered by his reinsurance policy plus the reinsurance premium he must pay. Under a proportionate reinsurance policy, he sets his premiums to cover the proportion of claims he has to pay plus the reinsurance premium.

24.24 Alternatively, an approach using information from the accounts of the insurance corporation may be adopted. These may include an equalization provision, which is an adjustment to reflect the variations in claims from one year to another. Whichever method is used, therefore, the adjusted claim figure approximates the expected level of claims.

Life insurance benefits

24.25 Life insurance benefits are the amounts payable under the policy in the accounting period in question. No adjustment for unexpected volatility is necessary in the case of life insurance.

4. Reserves

24.26 The concept of reserves used in the formula for deriving the value of insurance output corresponds to the definition of respectively non-life insurance technical reserves and life insurance and annuity entitlements as defined in chapter 14 on Balance sheet. These cover provisions for unearned premiums, for unexpired risks (i.e., the amounts set aside in addition to the unearned premiums in respect of risks to be borne by the insurer after the end of the financial year in order to provide for all claims and expenses in excess of the related unearned premiums), claims, or benefits outstanding and reserves for bonuses and rebates, the latter applying in the main to life insurance only. The coverage of unearned premiums and claims outstanding is given in section A.

5. Defining insurance output

Non-life insurance

24.27 The output of the insurance corporation represents the service provided to the policyholders. The output of direct non-life insurance is based on the principle of adding premiums and premium supplements and deducting adjusted claims incurred.

24.28 If an expectations approach is being used, the formula to calculate output takes the following form:

Actual premiums earned;

plus premium supplements;

minus adjusted claims incurred;

where adjusted claims are estimated from past experience. In such a case, conceptually premium supplements should also be estimated on the basis of past experience. However, since premium supplements, i.e., the investment income, excluding holding gains and losses, derived from the investment of the non-life insurance technical reserves, are less volatile than claims, in practice no such adjustment may be necessary. If a statistical basis is to be used for estimating output, it is advisable to use information broken down by “line of business”, that is for motor insurance, buildings insurance, etc. separately.

24.29 Alternatively, an accounting approach may be used whereby output is calculated as:

Actual premiums earned;

plus premium supplements;

minus adjusted claims incurred;

where adjusted claims are determined by using claims due plus the changes in equalization provisions and, if necessary, changes to own funds.

24.30 If the necessary accounting data are not available and the historical statistical data are not sufficient to allow reasonable average estimates of output to be made, the output of non-life insurance may be estimated as the sum of costs (including e.g., intermediate consumption, remuneration of employees, depreciation of and net return to capital used in production, and rent payable on (rented) non-produced non-financial assets used in production) plus an allowance for “normal profit”. However, since any reasonable estimate for “normal profit” is likely to involve expected claims, this option is hardly different from the expectations approach.

Life insurance

24.31 The output of direct life insurance is calculated separately as:

Actual premiums earned;

plus premium supplements;

minus benefits due;

minus increases (plus decreases) in life insurance and annuity entitlements.

24.32 If adequate data are not available for the calculation of life insurance according to this formula, an approach based on the sum of costs, similar to that described for non-life insurance, may be used. As for non-life insurance, an allowance for normal profits must be included.

Reinsurance

24.33 The formula to calculate the output of reinsurance services is exactly analogous to those for direct insurance. However, because the primary motivation of reinsurance is to limit the direct insurer's exposure to risk, a reinsurer deals with exceptionally large claims as a matter of normal business. For this reason, and because the market for reinsurance is concentrated in relatively few large firms worldwide, it is less likely that the reinsurer will experience an unexpectedly large loss than a direct insurer does, especially in the case of excess of loss reinsurance.

24.34 The output of reinsurance is measured in a way similar to that for direct non-life insurance. However, there are some payments peculiar to reinsurance. These are commissions payable to the direct insurer under proportionate reinsurance and profit sharing in excess of loss reinsurance. Once these are taken into account the output of reinsurance can be calculated as:

Actual premiums earned less commissions payable;

plus premium supplements;

minus both adjusted claims incurred and profit sharing.

C. All the transactions associated with non-life insurance

24.35 This section describes the full set of entries needed in the accounts to record all the implications of a non-life insurance policy. Policies may be taken out by corporations, government units, NPISHs, households and units in the rest of the world. However, when a policy taken out by a member of a household qualifies as social insurance, the entries required are as described in sections G to K of this chapter on social insurance and not as described here.

1. Premiums less service charges and consumption of insurance services

24.36 The actual premiums earned and the premium supplements are shown in the sequence of economic accounts divided between two types of transactions. The first is the value of the output of insurance, which is shown as either consumption or export of insurance services. The second is premiums earned less service charges by the insurance corporations. ***Non-life insurance premiums less service charges (D71) are defined as the sum of actual non-life insurance premiums payable by policyholders to obtain insurance cover during the accounting period (actual premiums earned) and the premium supplements payable out of the investment income attributed to policyholders less the service charges payable to the insurance corporation***. Because of the way in which the value of the service output is defined, non-life insurance premiums less service charges are equal in total to adjusted, and not actual, claims. Any variation between adjusted and actual claims represents a transfer between the policyholders and the insurance corporation. Over time, a transfer in one direction is offset by one in the other.

24.37 Insurance services are consumed by those sectors (and the rest of the world) that pay premiums. Estimates of the value of consumption by sector are usually made by allocating the total value of the service in proportion to the actual premiums earned. Estimates of premiums less service charges are then made by deducting the consumption of services from the total value of actual premiums earned plus the value of the premium supplements. (Because premium supplements are also allocated in proportion to actual premiums earned, the premiums less service charges are also in effect allocated in the same proportions as the actual premiums earned.)

2. Recording non-life insurance claims

24.38 The time of recording claims incurred is generally in the period in which the event to which the claim relates took place. This principle is applied even when, in the case of disputed claims, the settlement may take place years after the event concerned. An exception is made in cases where the possibility of making a claim is recognized only long after the event has happened. For example, an important series of claims were recognized only when exposure to asbestos was established as a cause of serious illness and was judged to give rise to claims under an insurance policy valid at the time of the exposure. In such cases the claim is recorded at the time that the insurance company accepts the liability. This may not be the same time as when the size of the claim is agreed on or when the claim is paid.

24.39 Because the formula for output uses adjusted claims and not actual claims, only when the actual claims happen to be the same value as expected claims will premiums less service charges and claims be equal in a given period. They should however be approximately equal over a period of years excluding a year in which a disaster is recorded.

24.40 Claims are normally recorded as current transfers payable by the insurance corporation to the policyholder. In some circumstances, an insurance corporation may set the level of premiums so low that they are not expected to cover costs and the predicted level of claims. This may happen when the surplus from one line of business, for example home insurance, is being used to cross-subsidise another line of business, for example, vehicle insurance.

24.41 There is one case where claims may be recorded as capital transfers rather than current transfers and that is in the wake of a major catastrophe. The criteria for when the effects of a catastrophe should be treated like this must be determined according to national circumstances but these may involve the number of policyholders affected and the amount of the damage done. The rationale for recording the claims as capital transfers in this case comes from the fact that many of the claims will relate to destruction or serious damage to non-financial assets such as dwellings, buildings and structures, inventories and valuables. Damage corresponding to a normal level of claims is covered by, for example, depreciation or losses from inventories. These losses are thus captured as current expenditure elsewhere in the system. However, major losses in the wake of a catastrophe are recorded as the result of unforeseen events in the other changes in assets accounts and omitted from current expenditures. The recommendation is thus to record claims as current or capital transfers analogously.

24.42 It is noted the recording of claims due to catastrophic events as capital transfers is restricted to damages to non-financial assets. Claims due to losses to consumer durables should be recorded as income transfers. The increase in disposable income would thus cancel out final consumption expenditure on replacing the damaged consumer durables, leaving saving unaffected. However, from a feasibility perspective, it may be difficult to differentiate catastrophic damages to non-financial assets, including inventories, from similar damages to consumer durables. This would require further details on claims arising from insurance policies of households as consumers, to exclude those related to non-life insurance of dwellings and unincorporated enterprises. Unless this information is available, it is recommended to treat all claims arising from catastrophic events as capital transfers as the default option.

24.43 The recording of non-life insurance claims due to catastrophic events as capital transfers may also have an impact on the recording of reinsurance. However, what constitutes an exceptional event for insurers at the national level may be business-as-usual for a large worldwide operating reinsurance company. As a consequence, one may end up with a national insurer recording claims due to a catastrophic event as capital transfers, while the related claims received from the reinsurer are recorded as current transfers. Disposable income and saving of the national insurer would thus be positively affected by a catastrophic event, which is very counterintuitive. To avoid this, it is recommended to resolve them on a case by case basis. A strict delineation of catastrophic events would reduce the instances where this might occur.

24.44 It is recommended that following a catastrophe, the total value of the claims related to the catastrophe should generally be recorded as a capital transfer from the insurance corporation to the policyholders. Information on the level of claims to be met under insurance policies should be obtained from the insurance industry. If the insurance industry cannot provide this information, one approach to estimating the level of the catastrophe-related claims is to take the difference between the adjusted claims and the actual claims in the period of the catastrophe.

24.45 A consequence of recording such claims as capital transfers means that the disposable income of households and other policyholders does not increase counter-intuitively as would be the case if the claims were recorded, as normal, as current transfers. The net worth of the policyholders will show the effects of both the destruction of assets (as an other volume change) and an increase (initially) in financial assets from the capital transfers. This recording is consistent with the recording of assistance by government of an NPISH to cover some or all of the costs of repairing or replacing the assets of those affected by the catastrophe who are not covered by an insurance policy.

3. Insurance services provided to and from the rest of the world

24.46 Resident insurance corporations frequently provide insurance cover to households and enterprises in the rest of the world, and resident households and enterprises may purchase cover from insurance corporations in the rest of the world. The investment income attributed by resident insurance corporations to policyholders includes an allocation to policyholders in the rest of the world. These non-resident policyholders then also pay premium supplements to the resident insurance corporation. This information should be available for resident insurers and should be included in the rest of the world account.

24.47 Similar considerations also apply to the treatment of resident enterprises and households taking out policies with non-resident insurers. They receive imputed investment income from abroad and pay premiums and supplements to abroad. Estimation of the size of these flows is more difficult, especially when there is no resident insurer of the same type against which to make comparisons. However, very often the country providing the service will be known and it may be possible to use counterpart data to make estimates for the national economy. The level of transactions by residents should be known and the ratio of premium supplements to actual premiums earned in the economy providing the services could be used to estimate the investment income receivable and premium supplements payable.

4. The accounting entries

24.48 Altogether six pairs of transactions need to be recorded in respect of non-life insurance that is not part of social insurance; two pairs relating to the measurement of the production and consumption of the insurance service, three pairs relating to redistribution and one in the financial account. Under exceptional circumstances, a seventh transaction relating to redistribution may be recorded in the capital account. The value of the output of the activity, the investment income to be attributed to the policyholders and the value of the service charge are calculated specifically for non-life insurance in the manner described above.

24.49 The production and consumption transactions are as follows:

a. Since all such activity by resident institutional units is undertaken by insurance corporations, the output is recorded in the production account of insurance corporations;

b. The service may be consumed by any of the sectors of the economy or by the rest of the world; the value of the service is payable to insurance corporations. Payments by non-financial corporations, financial corporations, general government or NPISHs constitute intermediate consumption, recorded in their production account. Insurance clearly associated with the productive activity of a household unincorporated enterprise is also recorded as intermediate consumption in the production account of households. Other insurance payments by households are part of final consumption expenditure, recorded in the use of income account. Payments by the rest of the world are recorded as exports in the external account of goods and services.

24.50 The redistributive transactions cover investment income attributed to policyholders in respect of non-life insurance, non-life insurance premiums less service charges, and insurance claims:

a. Investment income attributed to policyholders in respect of non-life insurance is recorded as payable by insurance corporations. It is recorded as receivable by all sectors and the rest of the world. Both payables and receivables are recorded in the allocation of earned income account.

b. Non-life insurance premiums less service charges are calculated as actual premiums earned plus premium supplements (equal to the investment income attributed to policyholders) less the value of the services consumed. These premiums less service charges are payable by all sectors of the economy or the rest of the world and receivable by insurance corporations.

c. Insurance claims incurred are payable by insurance corporations and receivable by all sectors of the economy and the rest of the world. Both premiums less service charges and claims are recorded in the income transfers other than social transfers in kind account.

d. If some claims are to be treated as capital rather than current transfers, these are recorded in the capital account as payable to policyholders by insurance corporations.

24.51 Non-life insurance premiums less service charges should be recorded on the basis of the amounts due to obtain cover in the period of account, not the amounts actually paid in the period. Insurance claims should be recorded as payable on the date of the event concerned occurred, except in the type of case described above when the claim is recorded at the time the insurance company accepts that a liability exists. An entry in the financial account records any difference between actual premiums payable and actual premiums earned and claims due and claims payable.

24.52 By convention, unearned premiums and reserves against outstanding claims are shown as a change in liabilities of insurance corporation (with a negative sign if necessary) and a change in assets of all sectors and the rest of the world.

24.53 An example of these flows is shown in table 24.1.

Table 24.1: Accounts for non-life insurance – expenditures

Expenditures

Code		Corporations	Insurance corporations	Households	Other sectors	Total economy
	Production account					
P2	Intermediate consumption	1.0		3.0		4.0
P1	Output					
	Allocation of earned income account					
part of D4131	Investment income attributable to non-life insurance		6.0			6.0
	Income transfers other than social transfers in kind account					
D71	Non-life insurance premiums less service charges	8.0		31.0	6.0	45.0
D72	Non-life insurance claims		45.0			45.0
	Use of income account					
P3	Final consumption expenditure	0.0		2.0	0.0	2.0
	Financial account					
F61	Non-life insurance technical reserves	0.0		3.0	0.0	3.0
	of which unearned premiums	0.0		1.0	0.0	1.0
	claims outstanding	0.0		2.0	0.0	2.0

Table 24.1 (cont): Accounts for non-life insurance - revenues

Revenues

Code		Corporations	Insurance corporations	Households	Other sectors	Total economy
	Production account					
P2	Intermediate consumption					
P1	Output		6.0			6.0
	Allocation of earned income account					
part of D4131	Investment income attributable to non-life insurance policy	5.0		1.0		6.0
	Income transfers other than social transfers in kind account					
D71	Non-life insurance premiums less service charges		45.0			45.0
D72	Non-life insurance claims	6.0		35.0	4.0	45.0
	Use of income account					
P3	Final consumption expenditure					
	Financial account					
F61	Non-life insurance technical reserves		3.0			3.0
	of which unearned premiums		1.0			1.0
	claims outstanding		2.0			2.0

D. All the transactions associated with life insurance

24.54 This section describes the way in which recording of the entries for life insurance differs from non-life insurance. As for non-life insurance, but more significantly in practice, a life policy that qualifies as social insurance is recorded not as described here but as described in sections G to K of this chapter. The major difference between a normal life insurance policy and one qualifying as social insurance is that under the former, the premiums and benefits related to the policy are treated as mainly changes in wealth, recorded in the financial account. For a policy qualifying as social insurance, the contributions and benefits (pensions) are recorded as income transfers in the income transfers other than social transfers in kind account. The reason for the different treatment is that an individual policy other than social insurance is entered into entirely on the initiative of the policyholder. Policies that qualify as social insurance reflect the intervention of a third party, usually the government or the employer, to encourage or oblige the policyholder to make provision for income in retirement. Distinguishing all payments made under social insurance schemes, including those coming from qualifying individual policies, shows how far social policies to ensure income in retirement are successful.

24.55 The holder of a life insurance policy is always an individual. (If a company takes out an insurance policy on the life of an employee, this should be treated as term insurance and therefore as non-life insurance in the integrated framework of the SNA.) Life insurance transactions therefore take place only between insurance corporations and households, resident and non-resident. The production of the insurance services is matched by the value of the services consumed by households as part of final consumption expenditure and exports. The investment income attributed to insurance policyholders is treated as premium supplements. However, premiums and claims are not shown separately in the case of life insurance and are not treated as current transfers. Rather they constitute components of a net transaction recorded in the financial account, the financial asset involved being life insurance and annuity entitlements.

24.56 Four pairs of transactions are recorded in the accounts; two pairs relate to production and consumption of the insurance service, one pair shows the attribution of investment income to the policyholders and one pair shows the change in life insurance and annuity entitlements:

a. The output of the life insurance activity is recorded in the production account for the insurance corporations.

b. The value of the services consumed is recorded as final consumption expenditure payable by households in the use of disposable income account or as payable by the rest of the world (exports to non-resident households). Households may also make payments to non-resident insurers. Such payments are treated

as imports of insurance services.

c. Investment income attributed to insurance policyholders in respect of life insurance is recorded in the allocation of earned income account. Bonuses declared in connection with life insurance policies are treated as being distributed to policyholders even if they exceed the investment income earned by the institution declaring the bonus. The investment income is recorded as payable by insurance corporations and receivable by resident households or non-resident households in the rest of the world.

d. In the financial account, the item change in life insurance and annuity entitlements is shown as a change in assets of households and the rest of the world and a change in liabilities of insurance corporations. It is equal to actual premiums earned plus premium supplements (equal to the investment income attributed to policyholders; see paragraphs 24.16 to 24.21) less the value of the services consumed and less benefits due.

24.57 An example of these flows is shown in table 24.2.

Table 24.2: Accounts for life insurance – expenditures

Expenditures

Code		Corporations	Insurance corporations	Households	Other sectors	Total economy
	Production account					
P1	Output					
	Allocation of earned income account					
part of D4131	Investment income attributable to life insurance policy holders		7.0			7.0
	Use of income account					
P3	Final consumption expenditure			4.0		4.0
	Financial account					
F62	Life insurance and annuity entitlements			22.0		22.0
	of which net premiums			113.0		113.0
	benefits			-91.0		-91.0

Table 24.2 (cont): Accounts for life insurance - revenues

Revenues

Code		Corporations	Insurance corporations	Households	Other sectors	Total economy
	Production account					
P1	Output		4.0			4.0
	Allocation of earned income account					
part of D4131	Investment income attributable to life insurance policy holders			7.0		7.0
	Use of income account					
P3	Final consumption expenditure					
	Financial account					
F62	Life insurance and annuity entitlements		22.0			22.0
	of which net premiums		113.0			113.0
	benefits		-91.0			-91.0

24.58 Some life insurance policies yield a lump sum at a given date rather than a stream of payments. The lump sum may be used to purchase an annuity that itself converts a lump sum into a stream of payments. The recording of annuities is described in section F.

E. All transactions associated with reinsurance

24.59 Before discussing how the various elements contributing to the measurement of output of reinsurance are recorded in the integrated framework of the SNA, it is necessary to describe how reinsurance is measured and recorded.

24.60 The transactions between the direct insurer and the policyholder are measured as described in the previous section without any reference to the transactions between the direct insurer and the reinsurer. The transactions between the direct insurer and the reinsurer are recorded as an entirely separate set of transactions and no consolidation takes place between the transactions of the direct insurer as issuer of policies to its clients on the one hand and the holder of a policy with the reinsurer on the other.

24.61 The direct policyholder does not know, or need to know, whether the direct insurer involves a reinsurer to protect it against loss on the policy. The direct insurer receives actual premiums from its policyholders. Some of these are ceded to a reinsurer. The premiums are shown as being first payable to the direct insurer and then a lesser premium is payable to the reinsurer. This non-consolidation is sometimes referred to as gross recording on the part of the direct insurer. The alternative (net recording) would be to show part of the direct policyholders' premiums being paid to the direct insurer and part to the reinsurer but this option is not recommended either in commercial accounting or in the integrated framework of the SNA.

24.62 The actual premium payable by the direct insurer to the reinsurer is used by the reinsurer to earn investment income. This investment income, excluding any holding gains and losses, is treated as investment income payable to the direct insurer and returned to the reinsurer as a premium supplement. Thus a direct insurer pays investment income to its policyholders based on the whole of the actual premiums earned (or by approximation the actual premiums payable) but also receives investment income from the reinsurer corresponding to the amount of the premiums it has ceded to the reinsurer. The investment income receivable by the direct insurer from the reinsurer may be used to offset some of the investment income payable by the direct insurer to its policyholders but is not recorded explicitly as such.

24.63 As with direct insurance, in exceptional cases, for example following a catastrophic natural disaster, some part of reinsurance claims may be recorded as capital transfers rather than as current transfers; see also paragraph 24.43.

24.64 The whole of the output of the reinsurer represents intermediate consumption of the direct insurer holding the reinsurance policy. As noted above, many reinsurance policies are between insurance corporations resident in different economies. Thus the value of the output in these cases represents imports by the insurance corporation taking out the reinsurance policy and exports by the reinsurance corporation.

24.65 The recording of flows associated with reinsurance resembles the recording for non-life insurance except that the policyholder of a reinsurance policy is always another insurance corporation.

24.66 The production and consumption transactions are as follows:

a. Since all such activity by resident institutional units is undertaken by insurance corporations, the output is recorded in the production account of insurance corporations. Reinsurance services may be, and often are, provided by non-resident units and thus are recorded in imports.

b. The service may only be consumed by another insurance corporation, though this may be a non-resident unit, and is intermediate consumption of that unit unless the policyholder is non-resident in which case it is recorded as exports of the reinsurer.

24.67 The redistributive transactions cover investment income attributed to policyholders in respect of reinsurance, reinsurance premiums less service charges and reinsurance claims:

a. Investment income receivable by reinsurance policyholders is payable by insurance corporations, resident or non-resident, and receivable by similar institutions either resident or non-resident.

b. Reinsurance premiums less service charges are calculated as actual premiums earned plus premium supplements (equal to the investment income attributed to reinsurance policyholders) less the value of the services consumed. These premiums less service charges are payable by insurance corporations and receivable by other insurance corporations. (Either of the units due to make the payment or to receive it may be non-resident.)

c. Reinsurance claims are payable by insurance corporations and receivable by other insurance

corporations, either resident or non-resident. Both premiums less service charges and claims are recorded in the income transfers other than social transfers in kind account.

d. Commissions payable by reinsurers to the insurance corporation as the reinsurance policyholder are treated as reductions in the premiums payable to the reinsurers.

e. Profit sharing payable by the reinsurer to the direct insurer is recorded as a current transfer. (Although they are recorded differently, both commissions payable and profit sharing serve to reduce the output of the reinsurer.)

f. If some direct insurance claims are treated as capital and not current transfers, any reinsurance claims relating to the same event should also be treated as capital transfers.

24.68 An entry in the financial account records any difference between actual premiums payable and actual premiums earned and claims incurred and claims payable.

F. Annuities

24.69 The simplest case of a life insurance policy is one where a stream of payments is made by the policyholder to the insurance corporation over time in return for a single payment received as a claim at some point in the future. With the simplest form of annuity, the equivalent to the policyholder, called the annuitant, pays a single lump sum to the insurance corporation and in return receives a stream of payments either for a nominated period or for the rest of the annuitant's life (or possibly for the rest of the life of both the annuitant and a nominated other person).

24.70 Annuities are organized by insurance corporations and are a means of risk management. The annuitant avoids risk by agreeing to accept a known payment stream (known either in absolute terms or subject to a formula, such as being index-linked) in return for parting with a considerable sum. The insurance corporation takes the risk of making more from the sum, including the stream of income from investing the sum, than is due to the annuitant. The rates of annuities are determined taking life expectancy into account. The insurance corporation has to pay more than originally planned to long-lived annuitants who may receive more than their original payment and the income earned on it. Those who die early receive less, possibly considerably less, and the insurance corporation receives more than expected.

1. How an annuity works

24.71 It is simplest to explain the working of an annuity by means of an example. Suppose an insurance corporation offers an individual payments of 600 for life in return for a lump sum payment of 10 000 and further suppose that the insurance corporation expects the individual concerned to live for 25 years and that the discount rate being used is five per cent. As shown in figure 24.1, the present value of 600 for 25 years is only 8 700. Thus the remaining 1 300 represents the present value of the service charges of about 90 per year the insurance corporation expects to make. Thus, whether the annuitant recognizes it or not, the insurance corporation offer of 600 a year is a figure adjusted for service charges. The annuitant will actually be entitled to 690 a year but 90 is retained by the insurance corporation as a fee for its services.

24.72 Each year there is investment income payable to the annuitant equal to the unwinding of the annuity entitlements, equal to the discount factor of five percent on the remaining amount held by the insurance corporation. In the first year, the proportion of the investment income relating to the prepaid service charges (1 300) is 65 and the remaining 25 of the service charge is met from a drawdown of the value of 1 300 to 1 275. The remaining investment income (435) adds to the value of the net annuity entitlement of 8 700. At the end of the first year, therefore, the annuity entitlement is 8 535; the original sum of 8 700 plus the investment income of 435 and less the payment of 600. The drawdown on the start of year amount of the net annuity entitlement is thus 165 and the drawdown on the prepaid service charges is 25.

Figure 24.1: Example of an annuity

Starting position			
Purchase price of annuity (A)	10 000		
Present value of 600 a year for 25 years at 5% (B)	8 700		
Present value of service charges (C)	1 300		
Annualized rate (600*1300/8700)	90		
First year		**Second year**	
Investment income (interest) in respect of :		Investment income (interest) in respect of :	
A	500	A	491
B	435	B	427
C	65	C	64
Payments due		Payments due	
A	690	A	690
B	600	B	600
C	90	C	90
Decline in value of stocks		Decline in value of stocks	
A	- 190	A	- 200
B	- 165	B	- 173
C	- 25	C	- 26
End year stocks		End year stocks	
A	9 810	A	9 611
B	8 535	B	8 362
C	1 275	C	1 249
		Etc.	

24.73 This process continues year by year. As time progresses, the drawdown of the remaining reserves is an increasingly larger part of the payments due and the investment income payable a smaller part. In principle, every year the insurance corporation can review its assumptions about the remaining life expectancy of the annuitant and recalculate the amount available as a service charge. (In practice this is likely to be done at intervals and by cohort of annuitants.)

24.74 The detailed numerical example is intended to demonstrate the way an annuity functions but in fact it is not necessary to undertake all these calculations to determine the output of the insurance corporation. The value of output can be determined more simply as the total investment income due to the annuitant (500) less the amount payable to him (600) less the change in the value of the reserves (a reduction of 190), or 90 (500 – 600 - (-190)). This result can be seen to be parallel to the measurement of life insurance except that there is no actual premium element.

2. The output associated with an annuity

24.75 The output of an insurance corporation associated with administering annuities is calculated as:

the investment income attributable to the annuitants;

minus the amount payable to the annuitants (or surviving beneficiaries) under the terms of the annuity;

minus the change in the annuity entitlements but excluding the initial payments for new annuities.

The amount of the investment income attributable to the annuitants is equal to the discount factor times the start of year reserves and is independent of actual investment income and holding gains or losses earned by the insurance corporation. The item is parallel to the concept of premium supplement in the life insurance context.

3. All the transactions associated with annuities

24.76 There are three sets of transactions recorded for an existing annuity and further entries required for the initiation and termination of an annuity.

a. A service charge associated with the annuity is payable every year. It is recorded as output of the insurance corporation and final consumption expenditure of the household to which the beneficiary belongs. This might be a non-resident household.

b. Investment income equal to the discount factor times the level of annuity entitlements at the beginning of the period is recorded in the earned income account as payable by the insurance corporation and receivable by the household.

c. The change in the value of the reserves for annuities is recorded in the financial account as payable by the household to the insurance corporation.

24.77 When an annuity is initiated, there is a transfer of funds from the household to the insurance corporation. In many cases, however, this may simply be a "rollover" from a lump sum payable by that or another insurance corporation from the maturing of a normal life insurance policy immediately into an annuity. In such a case there is no need to record the payment of the lump sum and the acquisition of the annuity; there will simply be a change from life insurance reserves to annuity entitlements in the insurance corporation subsector. If an annuity is purchased independently of the maturing of a life insurance policy, this is recorded as a pair of financial transactions between the household and the insurance corporation. The household makes a payment to the insurance corporation and receives in return an asset arising from the terms of the annuity. The insurance corporation receives a financial asset from the household and incurs a liability towards it.

24.78 Annuities are normally terminated by death, at which point any remaining reserves for that annuitant are transferred to the insurance corporation. However, assuming the insurance corporation has predicted life expectancy accurately for the group of annuitants as a whole, the average funds remaining at death will be zero. If life expectancies change, revisions to the reserves must be made. For annuities in operation, an extension of life expectancies will reduce the amount available to the insurance corporation as a service charge, possibly making this negative. In such a case, the insurance corporation will have to draw on its own funds and hope to build these up again in future by associating higher service charges with new annuities.

G. Introduction to social insurance

24.79 Social insurance schemes are an important way in which individuals who participate in the scheme are paid benefits, described as social benefits, when certain conditions exist that would adversely affect their welfare. Some social benefits, however, are payable independently of participation in a social insurance scheme. It is the conditions under which the benefits are payable that identify a social insurance scheme, not the nature of the benefits in themselves.

24.80 A social insurance scheme is a form of contract and always involves at least one unit other than the beneficiary. The other unit may be an employer, general government or a financial institution (often an insurance corporation) or sometimes a non-profit institution serving households (NPISH).

24.81 The objective of this part of the chapter is to describe how the various sorts of social benefits provided under social insurance schemes are recorded in the integrated framework of the SNA. In order to do this, it is necessary to clarify the identifying characteristics of a social insurance scheme, the nature of the other unit involved, the types of benefits payable and the ways in which these are funded.

H. Basic definitions

1. Social benefits

24.82 Social benefits become payable when certain events occur, or certain conditions exist, that may adversely affect the welfare of the households concerned either by imposing additional demands on their resources or reducing their incomes. Social benefits may be provided in cash or in kind. There are a number of circumstances in which

social benefits may be payable:

a. The beneficiaries, or their dependants, require medical, dental or other treatment, or hospital, convalescent or long-term care, as a result of sickness, injuries, maternity, chronic invalidity, old age, etc. The social benefits may be provided in kind in the form of treatments or care provided free or at prices that are not economically significant, or by reimbursing expenditures made by households. Social benefits in cash may also be payable to beneficiaries needing health care.

b. The beneficiaries have to support dependants of various kinds: spouses, children, elderly relatives, invalids, etc. The social benefits are usually paid in cash in the form of regular dependants' or family allowances.

c. The beneficiaries suffer a reduction in income as a result of not being able to work, or to work full-time. The social benefits are usually paid in cash regularly for the duration of the condition. In some instances a lump sum may be provided additionally or instead of the regular payment. People may be prevented from working because of:

- voluntary or compulsory retirement;
- involuntary unemployment, including temporary lay-offs and short-time working;
- sickness, accidental injury, the birth of a child, etc., that prevents a person from working, or working full time.

d. The beneficiaries receive payments to compensate for suffering a reduction in income because of the death of the main income earner.

e. The beneficiaries are provided with housing either free or at prices that are not economically significant or by reimbursing expenditure made by households. These are social benefits in kind.

f. The beneficiaries are provided with allowances to cover education expenses incurred on behalf of themselves or their dependants. Education services may be provided in kind.

24.83 The above are typical circumstances in which social benefits are payable. However, the list is illustrative rather than exhaustive. It is possible, for example, that under some social insurance schemes other benefits may be payable. Conversely, by no means all schemes provide benefits in all the circumstances listed above. In practice, the scope of social insurance schemes is liable to vary significantly from country to country, or from scheme to scheme within the same country.

2. Social benefits provided by general government

24.84 Many social benefits are provided by general government. They may appear in the accounts as payments under social security, social assistance or social transfers in kind. Government may also be involved, as an employer, in other social insurance schemes.

24.85 Social security is the name given to the social insurance scheme operated by general government. As will be explained below, in order to receive social security benefits, an individual must participate in a social security scheme.

24.86 Social assistance is not a scheme and thus does not require participation. However, social assistance is frequently restricted to individuals with low incomes, disabilities or other particular characteristics. In some countries, though, a universal pension may be paid without any need for participation in which case it is part of social assistance also. There is a section discussing the difference between social insurance and social assistance at greater length in chapter 9 on Transfer income accounts.

24.87 The definition of social benefits includes the possible provision of health and education services. Typically general government makes such services available to all members of the community without requiring participation in a scheme or qualifying requirements. These services are treated as social transfers in kind and not as part of social security or social assistance. Social transfers in kind are also discussed in chapter 9.

24.88 In addition to health and education services provided by general government, such services may also be provided to individuals by NPISHs. These also are treated as social transfers in kind and not as part of social insurance

schemes.

3. Social benefits provided by other institutional units

24.89 Social benefits may also be provided by employers to the employees and their dependents or may be provided by other units such as a trades union. Collective arrangements that provide social benefits may also be set up for selected groups of self-employed persons. All social benefits provided by units other than general government are made under a social insurance scheme.

4. Social insurance schemes

24.90 A social insurance scheme is a form of contractual insurance scheme where the policyholder is obliged, or encouraged, to insure against certain contingencies by the intervention of a third party. For example, government may oblige employees or self-employed persons, which may include persons temporarily without employment, to participate in a social security scheme; employers may make it a condition of employment that employees participate in an insurance scheme specified by the employer; an employer may encourage employees to join a scheme by making contributions on behalf of the employee; a trades union may arrange advantageous insurance cover available only to the members of the trades union; or a separate institutional unit may be established to manage a collective arrangement for selected groups of people (e.g., self-employed persons) (see paragraph 24.100). Contributions to social insurance schemes are usually paid by, or on behalf of employees, though under certain conditions persons temporarily without employment or self-employed persons may also be covered.

24.91 A social insurance scheme is an insurance scheme where the following two conditions are satisfied:

a. the benefits received are conditional on participation in the scheme and constitute social benefits as this term is used in the integrated framework of the SNA; and

b. at least one of the three conditions following is met:

- Participation in the scheme is obligatory either by law or under the terms and conditions of employment of an employee, or group of employees;
- The scheme is a collective one operated for the benefit of employees and/or self-employed persons, which may also include persons temporarily without employment;
- An employer makes a contribution (actual or imputed) to the scheme on behalf of an employee, whether or not the employee also makes a contribution.

The second of these conditions implies that employer-independent schemes may under certain conditions qualify as social insurance schemes; see paragraph 24.100 for a further elaboration. Collective schemes organized in the form of individual pension trusts may also qualify, provided that the conditions for social insurance are met.

24.92 Those participating in social insurance schemes make contributions to the schemes (or have contributions made on their behalf) and receive benefits. Contributions and benefits are defined in similar ways to direct insurance premiums and claims, as described in sections A to F. ***Social insurance contributions consist of actual and imputed contributions payable to social insurance schemes in order for a designated beneficiary to be entitled to receive the social benefits covered by the scheme. Social insurance benefits (D621+D622) are social benefits payable because the beneficiary participates in a social insurance scheme and the social risk insured against has occurred. They consist of social security benefits in cash (D621) and other social insurance benefits (D622).***

24.93 Social security is a form of social insurance scheme. The relative importance of social security relative to other social insurance scheme varies considerably from one country to another depending on institutional arrangements. In some countries, social security may be restricted to basic pension provision of the social safety net variety. At the other extreme, almost all pension provision, including that accruing to employees in government, private and public enterprises as well as self-employed persons, which may include persons temporarily without employment, may be routed through social security.

24.94 The two classes of social insurance schemes are:

a. Social security; and

b. Other social insurance schemes.

The other social insurance schemes may be managed by an employer directly on his own behalf, or by a designated institutional unit set up to provide a collective social insurance type of arrangement. Alternatively, the other social insurance scheme may be arranged with an insurance corporation as a group policy or series of policies or they may be managed by an insurance corporation in return for a fee.

Multiemployer schemes

24.95 An insurance corporation may, for a fee, agree not only to administer a pension scheme but to take on the risks associated with it. This can be done in the context of performing this service for a number of schemes collectively under what is called a multiemployer scheme. Under many such schemes, the insurance corporation takes over the responsibility of managing the funds at its disposal so as to make sufficient funds available to meet pension liabilities and to make a surplus it can retain. If it fails to make sufficient funds available for the pension entitlements, it is then the responsibility of this firm and not the original employers, to make good the difference from its own resources.

24.96 Alternatively, special institutional units may be set up to administer multiemployer pension schemes, for which the risks associated with the scheme are shared between those participating in the scheme, be it the employers, the employees and/or the persons in retirement. Such schemes may have at some stages positive, or occasionally even negative, own funds, depending on whether the accumulated asset are higher, or lower, than the pension entitlements. Similar arrangements may exist for groups of self-employed persons, or self-employed persons may be permitted to join multiemployer schemes that are predominantly intended for employees.

24.97 When government takes over the responsibility for providing pensions to large sections of the community, the social security function is in effect filling the role of a multiemployer scheme. Like the insurance corporation, the government then takes on the responsibility for any shortfall in funds to meet the pension liabilities or may be entitled to retain any surplus generated. It is often the case, though, that social security is funded on a pay-as-you-go basis so there is no question of a surplus arising and, if there is a shortfall in resources, government may have powers to change the entitlements not just relating to future employment but for the past also.

5. Individual insurance policies qualifying as social insurance

24.98 Many social insurance schemes are organized collectively for groups of workers so that those participating do not have to take out individual insurance policies in their own names. In such cases, there is no difficulty distinguishing social insurance from insurance taken out on a personal basis. However, some social insurance schemes may permit, or even require, participants to take out policies in their own names. Most of these individual policies that may qualify as social insurance schemes are likely to be for pension provision but it is also possible that they may cover other eventualities, for example by providing income in the case the policyholder is unable to work for a prolonged period because of ill-health.

24.99 In the case of employer-employee relationships, the determinants for the insurance to count as a social insurance policy, and not as an individual insurance policy, are that the benefits must be of the social benefit type (see paragraph 24.82), and an employer makes an actual or imputed contribution to the scheme on behalf of an employee. If participation to a scheme is not obligatory, but only encouraged, it can become more difficult to differentiate between social insurance type of schemes and individual insurance policies. It is clear, however, that insurance policies solely taken out by individuals would not qualify as social insurance, even if, for example, a discount is arranged for a designated group of people.

24.100 Schemes providing social benefits may also be established for groups of self-employed persons or other groups of people. When organized by government, as part of a broader arrangement, such schemes would typically qualify as social insurance. If government is not directly involved, the default option is to not treat such types of schemes as part of social insurance, unless the schemes are collective arrangements which provide policies, for certain industries or professions, with a strong resemblance to similar arrangements organized by employers or government. These schemes may, or may not, be encouraged by government; in the former case, this would

strengthen the case for a classification as social insurance. To qualify as social insurance, generally separate institutional units should be established that are subject to regulation or supervision in line with or similar to other social insurance schemes. In the case of pension-related schemes, an additional criterion for the qualification as social insurance is that accumulated contributions are set aside for retirement income.

24.101 The premiums payable, and claims receivable, under individual policies taken out under a social insurance scheme are recorded as social contributions and social insurance benefits. Contributions to social insurance schemes are frequently paid on a monthly or even more frequent basis as they are often made directly when wages and salaries are payable.

24.102 Individual insurance policies that do not qualify as social insurance are described as individual insurance not qualifying as social insurance, or in short as other insurance. They are recorded in the accounts of the sequence of economic accounts as described in sections A to F of this chapter.

6. Benefits payable under social insurance schemes

24.103 In the integrated framework of the SNA, social insurance benefits and the corresponding contributions are divided between those relating to pensions and those relating to all other forms of benefit. The most important pension benefit covered by social insurance schemes is income in retirement but a number of other contingencies may be covered also. For example, pensions may be payable to widows and widowers or to people who suffer an industrial injury and are no longer able to work. All of these sorts of contingencies that give rise to payments because the main income earner is no longer able, through death or incapacity, to provide an income for himself or herself and dependants are treated as pensions.

24.104 All other benefits are grouped together as non-pension benefits. The distinction between the two is important because the sequence of economic accounts recognizes liabilities for some pensions whether there are actually assets set aside to meet the entitlements or not, but recognizes reserves for non-pension benefits only when these actually exist.

I. Accounting for non-pension contributions and benefits

24.105 Non-pension benefits may be payable under social security and under other social insurance schemes. Although in many countries there may in fact be no non-pension benefits, a description is given of how these should be recorded if they exist. For other, non-pension related, social insurance schemes, the way of recording varies depending on whether reserves for provision of future benefits are set aside or not. Although in many cases there may be no such reserves and the benefits are paid on a pay-as-you-go basis, a description of the appropriate recording in each case is given.

1. Non-pension benefits payable under social security

24.106 As is typical of social security schemes, there may be contributions payable by both the employer and the employee. Contributions may also be payable by self-employed persons, or persons temporarily without employment. The costs of operating social security schemes are treated as part of the normal expenditure of general government and so the accounting for social security operations does not include measures of output.

24.107 In the sequence of economic accounts flows are recorded as follows.

a. Employers' social security contributions are shown as payable by the sector in which the employer is located and receivable by households. The sector of the employer may be any of non-financial corporations, financial corporations, general government (as an employer), employer households, NPISHs or the rest of the world (when a resident works for a non-resident institutional unit). For resident employers the payables are shown in the generation of earned income account; payables by non-resident employers are shown in the earned income account for the rest of the world. Receivables by resident households are shown in the allocation of earned income account and by non-resident households in the earned income account for the rest of the world.

b. In the income transfers other than social transfers in kind account, the sum of employers' social security contributions and social security contributions by households in their capacity as employees or any other capacity, is shown as payable by households and receivable by government. Further, social security benefits in cash payable to households are shown as payable by government (or the rest of the world if from a foreign government) and receivable by households.

24.108 An example of these flows is shown in table 24.3.

Table 24.3: Accounts for non-pension benefits paid through social security – expenditures

Expenditures

Code		Employer	Social security fund	Households	Other sectors	Total economy
	Generation of earned income account					
part of D1212	Employers' actual social security contributions (non-pension)	15.0				15.0
	Allocation of earned income account					
part of D1212	Employers' actual social security contributions (non-pension)					
	Income transfers other than social transfers in kind account					
part of D61	Social security contributions (non-pension)			25.0		25.0
part of D6112	Employers' actual social security contributions (non-			15.0		15.0
part of D6132	Household actual social security contributions (non-pension)			10.0		10.0
D6212	Social security non-pension benefits in cash		22.0			22.0

Table 24.3 (cont): Accounts for non-pension benefits paid through social security – revenues

Revenues

Code		Employer	Social security fund	Households	Other sectors	Total economy
	Generation of earned income account					
part of D1212	Employers' actual social security contributions (non-pension)					
	Allocation of earned income account					
part of D1212	Employers' actual social security contributions (non-pension)			15.0		15.0
	Income transfers other than social transfers in kind account					
part of D61	Social security contributions (non-pension)		25.0			25.0
part of D6112	Employers' actual social security contributions (non-		15.0			15.0
part of D6132	Household actual social security contributions (non-pension)		10.0			10.0
D6212	Social security non-pension benefits in cash			22.0		22.0

2. Unfunded non-pension benefits other than from social security

24.109 In the integrated framework of the SNA, an employer operating an unfunded scheme is regarded as making an imputed social contribution to the scheme on behalf of the employees. In practice, the value of the employers' and employees' contributions is usually set equal in value to the benefits payable in the period under consideration (plus the cost of operating the scheme as described in the following paragraph). The imputed contribution forms

part of the remuneration of employees and is also shown as being payable by the employees to the scheme together with any actual payments by the employees. Even though the scheme is unfunded, the employee may still make a contribution; however, it is not uncommon for unfunded schemes to be non-contributory for the employees.

24.110 Even if a scheme is unfunded, there are costs involved in administering it. In principle, output equal to the sum of these costs should be treated as being paid for by the beneficiaries from an imputed element of contributions. The imputed contribution to employees should include these costs as well as the value of the benefits received by employees. A value equal to the amount of the costs of operating the scheme is then recorded in the use of income account as a purchase of a service by the employees from the employer.

24.111 There are two transactions recorded for the production and consumption of the services provided by the employer. Because the scheme is unfunded, there are no investment income flows and no contribution supplements to be recorded. There are two sets of redistributive transactions recorded.

24.112 The production and consumption transactions are as follows.

a. Output of services is imputed in the production account of the employer and the value of the output forms part of the imputed employers' contributions to social insurance incorporated in remuneration of employees.

b. Consumption of the service is recorded as household final consumption expenditure in the use of income account for resident households or as exports for non-resident households.

24.113 The redistributive transactions are as follows.

a. Employers' imputed contributions to unfunded social insurance schemes are shown as a payable by the sector in which the employer is located in the generation of earned income account and a receivable by households in the allocation of earned income account.

b. In the income transfers other than social transfers in kind account, employers' imputed contributions and any actual contributions by employees are shown as payable by households and receivable by the employer. Further, benefits payable to households by the employer are shown as payable by the employer and receivable by households.

24.114 An example of these flows is shown in table 24.4.

Table 24.4: Accounts for non-pension social insurance benefits from unfunded other employment-related schemes – expenditures

Expenditures

Code		Employer	Social insurance fund	Households	Other sectors	Total economy
	Generation of earned income account					
D1222	Employers' imputed non-pension contributions	9.0				9.0
	Allocation of earned income account					
D1222	Employers' imputed non-pension contributions					
	Income transfers other than social transfers in kind account					
part of D61	Household total non-pension contributions			9.0		9.0
D6122	Employers' imputed non-pension contributions			9.0		9.0
part of D6222	Unfunded non-pension benefits		9.0			9.0

Table 24.4 (cont): Accounts for non-pension social insurance benefits from unfunded other employment-related schemes – revenues

Revenues

Code		Employer	Social insurance fund	Households	Other sectors	Total economy
	Generation of earned income account					
D1222	Employers' imputed non-pension contributions					
	Allocation of earned income account					
D1222	Employers' imputed non-pension contributions			9.0		9.0
	Income transfers other than social transfers in kind account					
part of D61	Household total non-pension contributions		9.0			9.0
D6122	Employers' imputed non-pension contributions		9.0			9.0
part of D6222	Unfunded non-pension benefits			9.0		9.0

3. Funded social insurance other than pensions

24.115 As noted above, funded schemes for benefits other than pensions are not very common. They may, however, exist in two circumstances. The first is when an employer has a fund for such benefits and accumulates any underspend in one year to pay for possible overspends in future years. Alternatively, an employer may realize that the commitments to make payments in future are such that it is prudent to build reserves to be able to make such payments. An example of such a scheme might be one that provides health cover to present and past employees. Unlike in the case of pensions, estimates of possible future claims on social insurance benefits other than pensions are not necessarily included in the SNA sequence of economic accounts. Liabilities are recorded only when and to the extent that they exist in the employer's accounts.

24.116 Funded social insurance covering benefits other than pensions for employees, including persons temporarily without employment, may be carried out by insurance corporations or by employers on behalf of their employees. Separate units may also be established for administering a scheme for self-employed persons. The output of this activity is measured in the same way as the output of non-life insurance but the matching consumption of the services is payable only by the households of the beneficiaries. These will be resident households except where a resident producer is liable to pay benefits to a present or former employee who is a non-resident or who has a non-resident family member entitled to the benefits. The investment income attributed to the beneficiaries of the social insurance schemes can only be receivable by the same households.

24.117 Employers' contributions relate only to employees. However, both current and former employees who are now, or may in future be, beneficiaries may make contributions to the scheme and receive investment income from it. This investment income is then treated as contribution supplements payable by those receiving it.

24.118 All contributions to the schemes are recorded as payable by households. These contributions include that part paid by the employer as part of remuneration of employees in the generation of earned income account as well as contributions paid directly by the employee funded from wages and salaries or by others including former employees and self-employed persons. Further, households receive investment income attributable to policyholders in respect of these contributions and this is treated, in total, as contribution supplements. Two items of contributions appear in the income transfers other than social transfers in kind account. The first, the employers' actual social contributions, is exactly equal in value to the amount receivable by households from the employer in the generation of earned income account. The second item, called households social contributions, includes the direct payment by households, including those paid by former employees and self-employed persons, plus the contribution supplements less the service charge payable to the social insurance schemes.

24.119 Eight transactions must be recorded, two relating to production and consumption of the insurance service, three relating to contributions and benefits, one to the investment income attributable to policyholders and two relating to the difference between contributions and benefits:

a. The activity by resident units is undertaken by an insurance corporation, by an employer, or by a unit specifically established for administering a scheme; the output is recorded in the production account of

the insurance corporations or in the sector of the employer as appropriate;

b. Employers' actual social contributions to other social insurance schemes are shown as payable by the sector in which the employer is located in the generation of earned income account and receivable by households in the allocation of earned income account;

c. Investment income attributed to policyholders (beneficiaries) in respect of these schemes is payable by insurance corporations and employers, and receivable by households. Both payables and receivables are recorded in the allocation of earned income account;

d. Social contributions less service charges are shown in the income transfers other than social transfers in kind account as payable by households and receivable by insurance corporations or the sector of the employer as appropriate;

e. Other social insurance non-pension benefits are also shown in the income transfers other than social transfers in kind account as payable by insurance corporations or the sector of the employer and receivable by households;

f. The value of the service is payable by households as part of final consumption expenditure and is recorded in the use of income account, except for non-resident employee households where it is payable by the rest of the world;

g. The excess of contributions less service charges over benefits represents an increase in the liability of the insurance scheme towards the beneficiaries. This item is shown as an adjustment in the use of income account. As an increase in a liability, it is also shown in the financial account. As noted, the item is likely to occur only rarely and, for pragmatic reasons, changes in such entitlements to non-pension social insurance benefits may be included with those for pensions.

24.120 An example of these flows is shown in table 24.5.

Table 24.5: Accounts for non-pension social insurance benefits from funded other employment-related schemes – expenditures

Expenditures

Code		Employer	Social insurance fund	Households	Other sectors	Total economy
	Production account					
P1	Output					
	Generation of earned income account					
D1212	Employers' actual non-pension contributions	6.0				6.0
	Allocation of earned income account					
D1212	Employers' actual non-pension contributions					
D4	Property income				4.0	4.0
part of D4132	Investment income payable on non-pension entitlements		4.0			4.0
	Income transfers other than social transfers in kind account					
part of D61	Household total non-pension contributions less service			14.0		14.0
D6112	Employers' actual non-pension contributions			6.0		6.0
D6132	Households' actual non-pension contributions			5.0		5.0
D6142	Households' non-pension contribution supplements			4.0		4.0
D615	Social insurance scheme service charges			-1.0		-1.0
part of D6222	Funded non-pension benefits		7.0			7.0
	Use of income account					
P3	Final consumption expenditure			1.0		1.0
D8	Adjustment for the change in pension and non-pension		-2.0			-2.0
B8	Saving	-6.0	10.0	0.0	-4.0	0.0
	Financial account					
F65	Entitlements to non-pension benefits			-2.0		2.0

Table 24.5 (cont): Accounts for non-pension social insurance benefits from funded other employment-related scheme – revenues

						Revenues
Code		Employer	Social insurance fund	Households	Other sectors	Total economy
	Production account					
P1	Output		1.0			1.0
	Generation of earned income account					
D1212	Employers' actual non-pension contributions					
	Allocation of earned income account					
D1212	Employers' actual non-pension contributions			6.0		6.0
D4	Property income		4.0			4.0
part of D4132	Investment income payable on non-pension entitlements			4.0		4.0
	Income transfers other than social transfers in kind account					
part of D61	Household total non-pension contributions less service		14.0			14.0
D6112	Employers' actual non-pension contributions		6.0			6.0
D6132	Households' actual non-pension contributions		5.0			5.0
D6142	Households' non-pension contribution supplements		4.0			4.0
D615	Social insurance scheme service charges		-1.0			-1.0
part of D6222	Funded non-pension benefits			7.0		7.0
	Use of income account					
P3	Final consumption expenditure					
D8	Adjustment for the change in pension and non-pension			-2.0		-2.0
B8	Saving					
	Financial account					
F65	Entitlements to non-pension benefits		-2.0			0.0

J. Accounting for pension contributions and pensions

24.121 Pensions are provided to individuals in an economy under one of three mechanisms, via social security, via other social insurance schemes or via social assistance. Together, social security and other social insurance pension schemes constitute social insurance schemes. Although the benefits provided under social assistance and some social insurance schemes may be very similar, the key distinction is that social insurance benefits are only paid if the beneficiary participates in the social insurance scheme, participation being normally evidenced by the beneficiary or another on his behalf having made qualifying contributions. Social assistance is paid without qualifying contributions having been made though means-testing may be applied to applicants.

24.122 The means by which pensions are provided to persons in retirement varies considerable from one country to another. This section describes the most common forms of pension provision made under social insurance schemes though not all aspects may apply to all countries. Pensions provided under social assistance are not discussed in this chapter but in chapter 9 on Transfer income accounts and chapter 10 on Use of income accounts.

24.123 Social insurance pensions in all countries are provided, if at all, in part by general government and in part by employers. They may also relate to employer-independent collective arrangements (see paragraph 24.100). The part provided by general government (other than certain schemes provided by government in its role as an employer) is called social security and the remainder is called other social insurance schemes. The division between which pensions are provided by social security and which by other social insurance schemes varies considerably from country to country with the consequence that the coverage and therefore national perceptions of what the term “social security” designates also vary considerably. In order to make clear the recommendations in the integrated framework of the SNA, it is necessary to consider the types of coverage provided in different countries.

24.124 The narrowest form of social security pension is very basic. The level may be fixed independently of the size of contributions (though not of the fact that contributions have been made for a given period of time). In the case of

employer-employee types of arrangements, an employee's right to a pension under social security is often transferable ("portable") from one employer to another, which is an advantage not always applying to other pension provisions, but for many people in low paid jobs, working temporarily or intermittently, it may be the only form of pension provision they can expect to receive.

24.125 In some countries most or all pension provision may be made via social security. In this case, government acts as an intermediary relative to the employer, or self-employed person, so that once the government has received the contributions to the scheme paid by the employer and the households, the government then takes on the risk of making the eventual payment. Government relieves the employer, or the self-employed person, of the risk that the cost of pensions may be too great to meet and assures the population that pensions will be paid, though it may do so with the qualification that it may alter the amount of pensions payable, even retrospectively, if economic conditions so dictate.

24.126 Pension schemes derived from an employer-employee relationship, including those run by public employers, are usually not subject to retrospective adjustments of the amounts payable, but there is a risk that the employer may be unable to pay because he has gone out of business. Increasingly, though, protection for the pension entitlements of individuals is becoming more common. Equally, the pension built up with one employer may not be transferable to a new employer though this too is undergoing change. While social security may be, and very often is, financed on a pay-as-you-go basis, without building up reserves for future liabilities, other social insurance schemes are increasingly likely to have reserves set aside. Even if there are no reserves, accounting conventions may require employers to recognize pension entitlements of present and past employees in their accounts.

24.127 When it comes to the recognition of pension entitlements, entitlements related to social security type of schemes are typically not recognised as assets (and liabilities) in the sequence of economic accounts, while entitlements derived from an employer-employee relationship are recognized as such. The main reason for treating the latter entitlements as assets is that they are usually not subject to retrospective adjustments of the amounts payable. The entitlements can be regarded as part of the conditions of employment, whereas social security schemes are generally imposed by law. The legal nature of the employment contract underlying the scheme significantly limits the possibility of the pension sponsor, be it a private employer or a public employer, to change the basis on which entitlements are determined. This assumes that the conditions of employment are the same, or at least sufficiently similar, for employees of private and public employers. If this is indeed the case for schemes for public employees, the related entitlements would qualify as assets (and liabilities) in the sequence of economic accounts, most certainly if the schemes are clearly separated from the social security type of pension schemes. In certain circumstances, defining similarity may not be that straightforward. A public employment contract may not follow the same terms as a private employment contract. The former type of contracts may be more generous in some aspects (e.g., tenure) but more restrictive in other aspects (e.g., ability to join political groups). Moreover, in some countries, public employees are governed by a general law, not by individual employment contracts. In such cases, where there are separate schemes for public employees, the concept of similarity should first and foremost focus on the terms and conditions of compensation, both current compensation and future compensation after retirement.

24.128 Employment-related pensions, other than the most basic form of social security, are seen as part of the compensation package and negotiations between employees and employers may focus on pension entitlements as much as on current conditions of service and pay scales. Often pensions are provided by employers from funds that the employers control or contract to a third party such as an insurance corporation, or another unit specifically established to administer the scheme. These funds may also provide social benefits other than pensions, for example private medical coverage. It is sometimes possible for a specialized unit to agree to assume responsibility for providing pensions for a number of employers in return for assuming the risk of ensuring adequate funding is available to make the promised pensions. Such an arrangement is called a multiemployer pension scheme; see also paragraphs 24.95 to 24.97.

24.129 As with non-pension social benefits, current employees, former employees and self-employed persons, who are current or future beneficiaries may make contributions to the scheme and receive investment income from it. This investment income is then treated as contribution supplements by those receiving it.

1. Social security pensions

24.130 It is common but not essential for both employers and employees to make contributions towards a social security pension. In addition, contributions may be made by self-employed persons and persons temporarily without employment. It is also common for the contributions to be compulsory. Social security pensions are frequently funded on a pay-as-you-go basis. The normal assumption in the sequence of economic accounts of the SNA is that this is how social security pensions are funded. That is the contributions receivable in a period are used to fund the benefits payable in the same period. There is no saving element involved, either for the government operating the scheme or for the individuals participating in it. No liabilities for the scheme are recognized in the sequence of economic accounts of the SNA although concern is often expressed that benefits may exceed contributions and this situation is likely to worsen in an ageing population. For this reason, estimates of the liabilities of social security as well as any other pension schemes not included in the sequence of economic accounts are included in a supplementary table described below in section K.

24.131 The recording of the flows for social security pension schemes is simple. Any contribution made by the employer is treated as part of remuneration of employees. It is recorded as payable by the employer in the generation of earned income account and receivable by the employee in the allocation of earned income account. The employee then pays an amount equal to what he receives from the employer together with any contribution he is liable to make on his own behalf to the social security fund. This amount is recorded as payable by households in the income transfers other than social transfers in kind account and receivable by the government in the same account. Any contributions made by self-employed persons or persons temporarily without employment are also included with the contributions payable by households to government. Social security benefits are recorded as payable by government and receivable by households in the income transfers other than social transfers in kind account.

24.132 An example of these flows is shown in table 24.6. It is similar in content to table 24.3 except that table 24.3 relates to non-pension benefits and table 24.6 to pension benefits.

Table 24.6: Accounts for pension benefits paid through social security – expenditures

Expenditures

Code		Employer	Social security fund	Households	Other sectors	Total economy
	Generation of earned income account					
part of D1211	Employers' actual social security contributions (pension)	139.0				139.0
	Allocation of earned income account					
part of D1211	Employers' actual social security contributions (pension)					
	Income transfers other than social transfers in kind account					
part of D61	Social security contributions (pension)			226.0		226.0
part of D6111	Employers' actual social security contributions (pension)			139.0		139.0
part of D6131	Household actual social security contributions (pension)			87.0		87.0
D6211	Social security pension benefits		210.0			210.0

Table 24.6 (cont): Accounts for pension benefits paid through social security - revenues

Code		Employer	Social security fund	Households	Other sectors	Total economy
						Revenues
	Generation of earned income account					
part of D1211	Employers' actual social security contributions (pension)					
	Allocation of earned income account					
part of D1211	Employers' actual social security contributions (pension)			139.0		139.0
	Income transfers other than social transfers in kind account					
part of D61	Social security contributions (pension)		226.0			226.0
part of D6111	Employers' actual social security contributions (pension)		139.0			139.0
part of D6131	Household actual social security contributions (pension)		87.0			87.0
D6211	Social security pension benefits			210.0		210.0

2. Other social insurance pension schemes

24.133 There are two forms of other social insurance pension schemes. One is called a defined contribution scheme, sometimes referred to as a money purchase scheme. The other is a defined benefit scheme, for which the benefits are typically based on salaries earned during employment and the years of service. Typically both schemes are contributory, in the case of schemes derived from an employer-employee relationship often by both the employer and the employee.

24.134 ***Defined contribution pension schemes are pension schemes where the benefits payable on retirement are defined exclusively in terms of the level of the funds built up from the contributions made and the increases in value that result from the investment of these funds by the manager of the scheme***. The entire risk of the scheme to provide an adequate income in retirement is thus borne by the employee, or self-employed person.

24.135 ***Defined benefit pension schemes are pension schemes where the benefits payable to an employee, or a self-employed person, on retirement are determined by an actuarial formula related to the participant's length of service and income, either alone or as a minimum amount payable.*** In this case the risk of the scheme to provide an adequate income in retirement is either borne entirely by the employer or is shared between the employer(s), the employees, or self-employed persons, and the retired persons. In certain cases, the risk may be borne by the multiemployer scheme that operates the defined benefit pension scheme. A scheme that may be defined in terms similar to a defined contribution scheme but with a guaranteed minimum, say, or other such hybrid schemes are grouped with defined benefit pension schemes in the integrated framework of the SNA. Notional defined contribution pension schemes (i.e., defined contribution schemes with a guaranteed minimum amount payable) are also grouped with defined benefit pension schemes.

24.136 For both types of pension schemes, pension entitlements of the participants are recorded as they build up. In both cases, there is property income earned on existing entitlements and this is recorded as being distributed to the beneficiaries and reinvested by them in the pension scheme. There are, though, a number of different features of the two schemes, so the transactions relating to each are described in detail separately before turning to other changes in the levels of pension entitlements. The recording of transactions for a defined contribution pension scheme is less complicated than the defined benefit pension scheme and is described first.

24.137 For a defined contribution pension scheme, a fund must exist. For defined benefit pension schemes, there are three cases: (i) a fund of accumulated assets exists and is sufficient to cover the pension entitlements (fully funded); (ii) a fund of accumulated assets exists, but is insufficient to meet the pension entitlements (partially funded); or (iii) no fund exists (unfunded). If a fund exists, it may be part of the same institutional unit as the employer, it may be a separate institutional unit (an autonomous pension fund) or it may be part of another financial institution, either an insurance corporation or a multiemployer pension scheme. In describing the recording of transactions, transactions with the pension fund must be attributed to the sector where the fund is

located.

Defined contribution pension schemes

24.138 Recording the transactions related to a defined contribution pension scheme presents no conceptual problems. There are no associated imputations either for the flows concerned or for the values appearing in balance sheets for the pension entitlements of the beneficiaries nor any doubt as to which unit has a liability and which an asset.

Transactions recorded for a defined contribution pension scheme

24.139 The contribution made by an employer to a defined contribution pension scheme on behalf of his employee is treated as part of remuneration of employees. It is recorded as payable by the employer in the generation of earned income account and receivable by the employee in the earned income account.

24.140 The property income on the cumulated pension entitlements is also recorded as being distributed, as investment income payable on pension entitlements, to (receivable by) households in the allocation of earned income account and is shown as payable by the pension fund. The investment income includes interest and dividends payable plus the distributed income of collective investment schemes if the pension fund holds shares in them. It is possible that the pension fund may own property and generate net operating surplus on this which is also included along with the investment income as being distributed to the pension beneficiaries. In this case, the term investment income is to be interpreted as being elastic enough to include this source of income if it exists. Holding gains and losses generated by the investment of the cumulated pension entitlements are not included in investment income.

24.141 Part of the income distributed to households is used to meet the costs of operating the pension fund. This cost is shown as the output of the pension fund in the production account and as an element of consumption expenditure by households in the use of income account. The remaining part of the distributed income is treated as pension contribution supplements paid back by households to the pension funds.

24.142 In the income transfers other than social transfers in kind account, social contributions are shown as payable by households and receivable by the pension fund. The total amount of the social contributions payable is made up of the actual contributions payable by the employers as part of remuneration of employees, actual contributions by employees and by other individuals (individuals formerly participating in a scheme, self-employed and non-employed persons as well as retirees) plus the contribution supplements just specified. For clarity, and to enhance the comparison with defined benefit schemes, the supplements are shown at full value in both the allocation of earned income account where they appear as investment income and in the income transfers other than social transfers in kind account where they appear as contribution supplements. However, the service charge is shown as an offsetting negative element to total household contributions in the income transfers other than social transfers in kind account. The total contributions made by households to the pension scheme are adjusted for the service charges in the same way that direct insurance premiums are adjusted, that is to say they are the total of all contributions made less the service charge appearing in the use of income account.

24.143 Those other than employees who contribute to a defined contribution pension scheme may be self-employed persons participating in a defined contribution pension scheme or may be persons not employed who participate in a defined contribution pension scheme by virtue of their profession or former employment status, for example.

24.144 Also in the income transfers other than social transfers in kind account, the pension benefits payable to households by the pension fund are shown. However, the benefits payable under a defined contribution pension scheme take the form of a lump sum payable at the moment of retirement. It may be a requirement of the scheme that these sums are to be immediately converted to an annuity with the same or another financial institution, but this is not a universal requirement. The appropriate recording of the benefits is not to show the benefit as payable immediately on retirement and then, where appropriate, reinvested in terms of an annuity or other forms of financial assets, but to record the transfers of the entitlements and related assets as financial transactions. Any difference between the transfer of entitlements and the transfer of related assets is to be recorded as a capital transfer between the pension scheme and the unit providing the annuity. In this respect, it is also important to note that the benefits from such an annuity continue to be recorded as pension benefits. For more information on the transfer of entitlements, see paragraphs 24.187 to 24.191. In case the benefits become payable in the form of a lump sum, and the subsequent investment into an annuity (or another form of investment) is an individual

decision, the lump sum would be recorded as pension benefits, followed by the purchase of a (individual) life insurance contract. The recording of annuities is discussed in section D of this chapter.

24.145 In the use of income account, there is an entry for the payment of the service provided by the pension fund (equal to the value of the pension fund's output) payable by households to the pension fund.

24.146 In the same account there is an entry showing the increase (or decrease) in pension entitlements caused by the excess (or deficit) of contributions payable less benefits receivable in the income transfers other than social transfers in kind account. This amount is shown as payable to households by the pension fund. Because much of the increase in the pension entitlement of participants in a defined contribution pension scheme, and thus ultimately the funding for the benefits, come from holding gains that are not included in the contribution supplements of participants in defined contribution pension schemes, the adjustment for the change in pension entitlements for these individuals will frequently be negative.

24.147 The adjustment for the change in pension (and non-pension) entitlements that is included in the use of income account as payable by the pension fund to households is shown in the financial account as payable by households to the pension fund. The effect of any transfer of the obligations to meet pension entitlements from a unit in one sector to another are also reflected in the financial account item.

24.148 The other factors affecting the change in the balance sheet entry for the change in pension entitlements are shown in the other changes in assets and liabilities accounts. In particular, the liabilities of the scheme to the beneficiaries show holding gains or losses in the revaluation account corresponding exactly to those on the assets held by the scheme to meet these obligations. .

24.149 Table 24.7 illustrates the entries necessary to record the transaction related to a defined contribution scheme. It is simpler than the corresponding table for a defined benefit pension scheme, which is described in the following section, because of the absence of any imputed transactions.

Table 24.7: Accounts for pension benefits payable under a defined contribution scheme – expenditures

Expenditures

Code		Employer	Pension fund	Households	Other sectors	Total economy
	Production account					
P1	Output					
	Generation of earned income account					
D1211	Employers' actual pension contributions	11.0				11.0
	Allocation of earned income account					
D1211	Employers' actual pension contributions					0.0
D4	Property income				3.0	3.0
D4132	Investment income payable on pension entitlements		16.2			16.2
	Income transfers other than social transfers in kind account					
part of D61	Social pension contributions less service charges			37.3		37.3
D6111	Employers' actual pension contributions			11.0		11.0
D6131	Households' actual pension contributions			11.5		11.5
D6141	Households' pension contribution supplements			16.2		16.2
part of D615	Pension scheme service charges			-1.4		-1.4
D6221	Other social insurance pension benefits		26.0			26.0
	Use of income account					
P3	Final consumption expenditure			1.4		1.4
D8	Adjustment for the change in pension and non-pension entitlements		11.3	0.0		11.3
B8	Saving	-11.0	-11.8	25.8	-3.0	0.0

Changes in assets

	Financial account					
B9	Net lending (+) / net borrowing (-)					
F63	Pension entitlements			11.3		11.3
F other	Other financial assets	-11.0	-0.5	14.5	-3.0	0.0

Table 24.7 (cont): Accounts for pension benefits payable under a defined contribution scheme - revenues

Code		Employer	Pension fund	Households	Other sectors	Total economy
						Revenues
	Production account					
P1	Output		1.4			1.4
	Generation of earned income account					
D1211	Employers' actual pension contributions					
	Allocation of earned income account					
D1211	Employers' actual pension contributions			11.0		11.0
D4	Property income		3.0			3.0
D4132	Investment income payable on pension entitlements			16.2		16.2
	Income transfers other than social transfers in kind account					
part of D61	Social pension contributions less service charges		37.3			37.3
D6111	Employers' actual pension contributions		11.0			11.0
D6131	Households' actual pension contributions		11.5			11.5
D6141	Households' pension contribution supplements		16.2			16.2
part of D615	Pension scheme service charges		-1.4			-1.4
D6221	Other social insurance pension benefits			26.0		26.0
	Use of income account					
P3	Final consumption expenditure					
D8	Adjustment for the change in pension and non-pension entitlements			11.3		11.3
B8	Saving					
						Changes in liabilities
	Financial account					
B9	Net lending (+) / net borrowing (-)	-11.0	-11.8	25.8	-3.0	0.0
F63	Pension entitlements		11.3			11.3
F other	Other financial assets					0.0

Defined benefit pension schemes

Differences between a defined benefit and a defined contribution pension scheme

24.150 The fundamental difference in accounting for a defined benefit pension scheme as compared with a defined contribution pension scheme is that, for the defined benefit pension scheme, the benefit to the participant in the current period is determined in terms of the undertakings made by the pension sponsor about the level of pension ultimately receivable, whereas for the defined contribution pension scheme the benefit to the participant in the current period is determined entirely by the contributions made to the scheme and the property income income and holding gains and losses earned on these and previous contributions. Thus while there is (in principle) exact information available on the pension entitlements accrued to date by the participants in a defined contribution pension scheme, the pension entitlements accrued to date by the participants in a defined benefit pension scheme must be estimated. The source of these estimates is the actuarial estimates drawn up by the pension sponsor or other institutional unit administering the scheme.

24.151 There are four sources of changes in pension entitlements in a defined benefit pension scheme. The first of these, the current service increase, is the increase in entitlements resulting from the participant’s service in the current period. The second source is the increase in the value of the entitlement due to the fact that for all participants in the scheme, retirement (and death) are one year nearer. The third change in the level of entitlement is a decrease due to the payment of benefits to retirees of the scheme. The fourth source of change comes from the past service increase, which is the change in the present value of the pension entitlement for the participant's service in prior

periods resulting from scheme amendments or curtailments, and other factors.

24.152 As with a defined contribution pension scheme, both the pension sponsor, typically an employer, and the participant, typically an employee, may make actual contributions to the scheme in the current period. However, these payments may not be sufficient to meet the increase in the benefits accruing from the current year's employment. Therefore an additional contribution from the pension sponsor is imputed to bring equality between the contributions and the increase in current service entitlements. These imputed contributions are usually positive but it is possible for them to be negative if the sum of the contributions received exceeds the increase in current service entitlements. The implications of this case are discussed below when examining the relationship between the pension sponsor and the fund.

24.153 At the end of an accounting period, the level of the pension entitlements due to past and present participants can be calculated by estimating the present value of the amounts due to be paid in retirement using actuarial estimates of the expected life length of the beneficiaries. This is the amount that appears in the balance sheet as the liability towards the participants. One element in the increase of this amount year by year is the fact that the present value of the entitlements existing at the beginning of the year and still due at the end of the year have increased because the future is one year nearer and so one fewer discount factor must be used to calculate the present value. It is this unwinding of the discount that accounts for the investment income earned by the pension beneficiaries.

24.154 A further basic difference between a defined benefit pension scheme and a defined contribution pension scheme concerns the payment for the cost of operating the pension scheme. As already noted, under a defined contribution pension scheme all the risk is borne by the beneficiaries. The pension scheme is operated on their behalf and they pay for the cost of it. Since the fund may be operated by a unit other than the employer, it is appropriate to treat the operating cost as part of the investment income that is retained by the fund to meet its costs (and generate a profit). In keeping with accounting for insurance, the investment income is treated as being attributed in full to the beneficiaries, part being used to meet the cost and the remainder being reinvested with the fund.

24.155 For a defined benefit pension scheme, the situation is somewhat different. The risk that the fund may be insufficient to meet the promises of entitlement is met in part or in whole by the pension sponsor (either the employer or a unit that has assumed the risk of meeting the pension obligations and not by the beneficiaries alone. The fund may be directly controlled by the pension sponsor and be part of the same institutional unit or may be purely notional. Even in this case, there are costs associated with operating the scheme. Although these are initially borne by the pension sponsor, it is appropriate to regard this as a form of income in kind provided to the participants and for convenience it may be included with the employers' contributions. There is an element of pragmatism in this since this assumes all the costs are borne by current participants and none by retirees. It also assumes that the attribution that must be made in the case of notional schemes can be applied in other circumstances also.

24.156 For a defined benefit pension scheme, it is unlikely that self- and non-employed persons currently contribute though it is possible if they were previously in employment giving rise to a defined benefit pension and have the right to continue to participate. Those previously in employment (whether currently in receipt of a pension or not) receive investment income and pay contribution supplements.

Transactions recorded for a defined benefit pension scheme

24.157 The initial discussion assumes that the employer retains the whole responsibility for meeting the pension payments. Alternatives involving the use of a multiemployer scheme or where government assumes responsibility on behalf of the employer are discussed subsequently.

24.158 The total contribution made by an employer to a defined benefit pension scheme on behalf of his employee must be sufficient that, together with any actual contribution by the employee and excluding the cost of operating the scheme, it exactly matches the current service increase in the employee's pension entitlements. The contribution by the employer is divided into an actual and an imputed part, the latter being calculated so as to meet the need of an exact match between all contributions to the fund adding to the entitlements of the employee and the current service cost of these entitlements.

24.159 The contribution by the employer should be calculated in relation to the pension entitlements earned in the period regardless of any investment income earned by the scheme in the same period or any overfunding of the scheme.

The current period entitlement is part of remuneration of employees and not to include the full value of the employer's contribution understates remuneration of employees and therefore overstates operating surplus. An extreme case has occurred in the past when the investment of the pension entitlements has done so well that the employer has taken a "contribution holiday", that is he has not made an actual contribution towards new entitlements. It is important that contributions continue to be recorded even in the event of a contributions holiday, the benefit to the employer being regarded as a change in liabilities between the pension fund and the employer. This leaves the net worth of both the same as when contributions are not recorded under a contributions holiday, without reducing remuneration of employees artificially.

24.160 Under many defined benefit pension schemes, there is a qualifying period before an employee does in fact become eligible to receive a pension in retirement. Despite this qualifying period, both contributions and entitlements should be recorded from the start of employment adjusted by a factor reflecting the probability that the employee will in fact satisfy the qualifying period.

24.161 The sum of employers' actual and imputed pension contributions is treated as part of remuneration of employees. It is recorded as payable by the employer in the generation of earned income account and receivable by the employee in the allocation of earned income account.

24.162 The increase in the present value of the entitlements of continuing employees and those who no longer contribute but remain eligible for pensions in future represents the investment income distributed to the employees. No deduction is made for any amount that may be funded from holding gains or that is not actually matched by existing funds. It matches the amount that is unequivocally due to the employee under the prevailing agreements; the means by which the employer may ultimately match this obligation is not relevant for the recording of this as investment income any more than the means by which interest or dividends are actually financed affect their recording as investment income. The investment income is recorded as payable by the pension fund and receivable by households. It is immediately reinvested by the households in the fund and in this guise is described as pension contribution supplements.

24.163 Especially in the case of (significantly) underfunded schemes, the income earned on the accumulated assets may fall short of the investment income payable on pension entitlements. On the other hand, there may be schemes where the income earned from accumulated assets is in excess of the investment income payable on pension entitlements. The shortfall (or excess) in property income receivable by the pension fund is treated as an imputed investment income attributable to surplus/shortfall in defined benefit pension funds. This income flow is recorded as a (negative) payable and a (negative) receivable between the pension sponsor and the pension fund. As a result, the income related to the unwinding of the entitlements exactly matches the income earned on the accumulated assets plus the imputed income from the pension sponsor.

24.164 In the income transfers other than social transfers in kind account, social contributions are shown as payable by households and receivable by the pension fund. The total amount of the social contributions payable is made up of the actual and imputed contributions payable by the employers as part of remuneration of employees (excluding the amount of the costs of running the pension scheme), plus actual contributions by employees, plus the contribution supplements specified in paragraph 24.162. As explained in the discussion under defined contribution pension schemes, the accounts show the full value of the contributions and contribution supplements with an offsetting item representing the service charge payable.

24.165 Also in the income transfers other than social transfers in kind account, the pension benefits payable to households by the pension fund are shown. When the benefits are taken in terms of an annuity, it is the annuity payments that are shown here, not the lump sums payable at the time of retirement.

24.166 In the use of income account, there is an entry for the payment of the service provided by the pension fund (equal to the value of the pension fund's output plus the output of the enterprises operating annuities bought with pension entitlements) payable by households to the pension fund and recorded as final consumption expenditure.

24.167 Also in the use of income account, there is an entry showing the increase (or decrease) in pension entitlements caused by the excess of contributions payable less benefits receivable in the income transfers other than social transfers in kind account. This amount is shown as payable to households by the pension fund. In the case of a defined benefit pension scheme, the amount is unlikely to be negative unless it is a scheme for a defunct employer and it is only paying benefits and not receiving new contributions.

24.168 The value of defined benefit pension entitlements may also be affected by changes in the terms of entitlements,

mainly impacting past service costs. If these changes in terms are the result of negotiations between the pension sponsor and beneficiaries, for example via a trade union, or the result of a legislative act, for instance on pension reforms for public sector employees, in which the "negotiation" is deemed to have taken place via the discussion by members of the legislature, the changes in entitlements should be recorded as a capital transfer between the beneficiaries and the pension scheme, and subsequently as a capital transfer between the pension scheme and the pension sponsor.

24.169 The same amount that is included in the use of income account as the adjustment for the change in pension entitlements plus the changes in entitlements as a result of negotiations about the terms are included in the financial account as a change in the claim by households on the pension fund. The other factors affecting the change in the balance sheet entry for the change in pension entitlements are shown in the other changes in assets and liabilities accounts and are discussed further below.

Defined benefit pension schemes operated by other than employers

24.170 It is possible that some other organization, such as a trades union, may operate a defined benefit pension scheme for its members that is in all respects parallel to an employer's defined benefit pension scheme. Exactly the same recording is followed as just described except that references to the employer should be understood to refer to the scheme organizer and references to the employee should be understood to refer to the participant in the scheme.

The relationship between the employer and the pension fund

24.171 As noted above, an employer may contract with another unit to administer the pension scheme and arrange disbursements to the beneficiaries. There are two ways in which this may happen. The operator of the pension scheme may simply act as the employer's agent and the responsibility for any shortfall in the fund (or the benefit of any excess) remains with the employer. In this case the unit handling the day to day running of the pension scheme is called the pension administrator.

24.172 However, it is not uncommon for a single unit to contract with several employers to manage their pension schemes as a multiemployer pension scheme. The arrangements are such that the multiemployer pension scheme accepts the responsibility for any shortfall in the funds to meet the liabilities in return for the right to keep any excess funds. By pooling the risks over a number of employers the multiemployer fund expects to balance under- and over-funding so as to emerge with an excess over all the funds taken as whole in a similar way that an insurance corporation pools risk for many clients. In such a case, the unit assuming responsibility for meeting the pension obligations becomes the pension sponsor in place of the employer.

24.173 Alternatively, as noted in paragraph 24.96, special institutional units may be set up to administer a multiemployer pension scheme, for which the risks associated with the scheme are shared between those participating in the scheme, be it the employers, the employees and/or the persons in retirement. Such schemes may have at some stages positive, or occasionally even negative, own funds, depending on whether the accumulated asset are higher, or lower, than the pension entitlements. Similar arrangements may exist for groups of self-employed persons.

24.174 In the case where the employer retains the liability for any underfunding or the benefit of any overfunding, a (negative) claim on the employer (the pension sponsor) by the pension fund should be recorded for any deficit or surplus. The change in this claim is equal to the difference between the increase in pension entitlements and the sum of the actual contributions and contributions supplements in the period, plus the investment income earned on the entitlements, plus the holding gains made on them, less the pensions payable, less the fee charged by the pension administrator. When the amount accruing to the pension fund exceeds the increase in entitlements, there is an amount payable by the pension fund to the employer as pension sponsor. In this way the net worth of the pension fund remains exactly zero at all times.

24.175 The amount due to the pension sponsor by the pension fund is where the impact of a contribution holiday shows up since it includes the amount of the employer's contributions that would normally be payable.

A numerical example

Transactions for defined benefit schemes operated by other than employers

24.176 In order to illustrate the recording of transactions connected with a defined benefit pension scheme, table 24.8 shows a numerical example. Figures that are imputed are shown in bold; those that result from re-routing are shown in italics.

Table 24.8: Accounts for pension benefits payable under a defined benefit scheme – expenditures

Expenditures

Code		Employer	Pension fund	Households	Other sectors	Total economy
	Production account					
P1	Output					
	Generation of earned income account					
D1211	Employers' actual pension contributions	10.0				10.0
D1221	Employers' imputed pension contributions	4.1				4.1
	Allocation of earned income account					
D1211	Employers' actual pension contributions					
D1221	Employers' imputed pension contributions					
D4	Property income				2.2	2.2
D4132	Investment income payable on pension entitlements		4.0			4.0
D4133	Investment income attributable to the surplus/shortfall in defined benefit pension funds	1.8				1.8
	Income transfers other than social transfers in kind account					
part of D61	Social pension contributions less service charges			19.0		19.0
D6111	Employers' actual pension contributions			10.0		10.0
D6121	Employers' imputed pension contributions			4.1		4.1
D6131	Households' actual pension contributions			1.5		1.5
D6141	Households' pension contribution supplements			4.0		4.0
part of D615	Pension scheme service charges			-0.6		-0.6
D6221	Other social insurance pension benefits		16.0			16.0
	Use of income account					
P3	Final consumption expenditure			0.6		0.6
D8	Adjustment for the change in pension and non-pension entitlements		3.0			3.0
B8	Saving	-15.9	0.6	17.5	-2.2	0.0
	Changes in assets					
	Financial account					
B9	Net lending (+) / net borrowing (-)					
F63	Pension entitlements			3.0		3.0
F64	Claims of pension funds on pension sponsors (current service)		5.9			5.9
F other	Other financial assets	-10.0	-2.3	14.5	-2.2	0.0

Table 24.8 (cont): Accounts for pension benefits payable under a defined benefit scheme - revenues

Code		Employer	Pension fund	Households	Other sectors	Total economy
						Revenues
	Production account					
P1	Output		0.6			0.6
	Generation of earned income account					
D1211	Employers' actual pension contributions					
D1221	Employers' imputed pension contributions					
	Allocation of earned income account					
D1211	Employers' actual pension contributions			10.0		10.0
D1221	Employers' imputed pension contributions			4.1		4.1
D4	Property income		2.2			2.2
D4132	Investment income payable on pension entitlements			4.0		4.0
D4133	Investment income attributable to the surplus/shortfall in defined benefit pension funds		1.8			1.8
	Income transfers other than social transfers in kind account					
part of D61	Social pension contributions less service charges		19.0			19.0
D6111	Employers' actual pension contributions		10.0			10.0
D6121	Employers' imputed pension contributions		4.1			4.1
D6131	Households' actual pension contributions		1.5			1.5
D6141	Households' pension contribution supplements		4.0			4.0
part of D615	Pension scheme service charges		-0.6			-0.6
D6221	Other social insurance pension benefits			16.0		16.0
	Use of income account					
P3	Final consumption expenditure					
D8	Adjustment for the change in pension and non-pension entitlements			3.0		3.0
B8	Saving					
						Changes in liabilities
	Financial account					
B9	Net lending (+) / net borrowing (-)	-15.9	0.6	17.5	-2.2	0.0
F63	Pension entitlements		3.0			3.0
F64	Claim of pension fund on pension sponsor (current service)	5.9				5.9
F other	Other financial assets					

24.177 Actuarial calculations show that the increase in pension entitlement coming from current service, that is the pension "earned" in the year in question is 15. Households (the employees) contribute 1.5. The employer therefore is obliged to provide 13.5. In addition the cost of operating the scheme is estimated at 0.6. In total therefore the employer must provide 14.1. He actually contributes 10, so the remaining 4.1 is an imputed pension contribution. The output of 0.6 is shown in the production account; the contributions by the employer are shown as payable by the employer in the generation of earned income account and receivable by the households in the allocation of earned income account.

24.178 In the allocation of earned income account, investment income is also shown. The increase in pension entitlement coming from the unwinding of the discount factor because retirement is one year nearer, is 4. This is shown as an imputed flow of investment income from the pension fund to households. At the same time, the pension fund actually earns 2.2 from property income on the funds they manage. The difference between the unwinding of the

pension entitlements and the actual property income received, 1.8, is to be recorded as (imputed) investment income on the claim between a pension fund and its sponsor. As a consequence, the entitlement coming from past service income related to the unwinding of the entitlements is matched by actual receivables of property income and imputed investment income receivable from the pension sponsor.

24.179 In the income transfers other than social transfers in kind account, the payments from households to the pension fund are shown. This can be viewed in one of two ways. The sum of the pension contributions paid by households should be equal to the increase in entitlements coming from current service (15) plus that coming from income on past entitlements (4) or 19 in total. The amounts actually paid are 10 received as the employers' actual pension contributions, 4.1 as the imputed pension contributions, 1.5 of the households own pension contributions, pension contribution supplements of 4 less the service charge of 0.6; again 19 in total. In the same account pensions of 16 are also shown as payable by the pension fund to households.

24.180 In the use of income account, as well as the purchase of the service charge as part of household final consumption expenditure, the change in pension entitlement is shown as payable by the pension fund to households. In this example, the amount of household contributions of 19 is set against pension benefits of 16. There is thus an increase in pension entitlements of 3 owing to households.

24.181 Households have saving of 17.5 of which 3 is the increase in their pension entitlements. This means that they have acquired other financial assets (or reduced liabilities) by 14.5. This figure is the difference between the pension benefits received (16) and households' actual pension contributions of 1.5.

24.182 For pension funds, disposable income is 3,6, but this can be seen as the composite of the actual and imputed elements. In terms of actual flows, pension funds receive pension contributions of 10 from employers routed via households, 1.5 from households and pay out benefits of 16, while they also receive investment income of 2.2. In addition, employers make an imputed pension contribution of 4.1 and also pay an imputed investment income on the claim of the pension fund of 1.8. The former element is routed via households. Both elements together add 5.9 to the disposable income of the pension fund and reduces disposable income of the employer by the same amount. When the change in pension entitlements of 3 is taken into account, saving is 0,6.

24.183 In the financial account of the pension fund, the figure of 4.1, which was the imputed pension contribution, as well as the figure of 1.8, which was the imputed investment income, are shown as the change in the claim of the pension fund on the employer. There is a claim by households on the pension fund of the change in pension entitlements of 3. In addition the pension fund either runs down financial assets or increases liabilities by 2.3, the figure corresponding to disposable income excluding the imputed contribution element from the employer.

Transactions for defined contribution pension schemes

24.184 Table 24.7 shows the similar flows for a defined contribution pension scheme. The accounts are simpler, compared to the defined benefit case, because there are no imputed elements. Further, the investment income payable by the pension fund to households reflects only investment income received by the pension fund and does not involve calculations about increases in entitlement from the operation of a formula.

24.185 The investment of the entitlements of defined contribution pension schemes leads to holding gains (and possibly losses). These come about through the management of the assets held by the fund but an amount exactly equal to the holding gains and losses should be attributed as an increase in the pension entitlement of the beneficiaries. The holding gains appear under entries for the relevant assets in the revaluation account for the pension fund with a matching entry for the increase in the liability of the pension fund towards households.

Other flows for defined benefit pension schemes

24.186 At first sight it would seem that there are no entries to be made in the other changes in assets and liabilities accounts for a defined benefit pension scheme since the two components recorded as the pension contributions and investment income are matched exactly to the increase in entitlements. However, because the nature of a defined benefit pension scheme is that the amounts due are determined by a formula, there are other factors that may intervene to change the level of entitlements. These factors include, for example, actuarial gains and losses, i.e., changes in entitlements resulting from experience adjustments (the effects of differences between the

previous actuarial assumptions and what has actually occurred) and the effects of changes in actuarial assumptions, among which changes in the discount rate, changes in demographic assumptions about life length and other changes in the formula used to determine benefits. It may also include the impact of settlements that eliminate all further entitlements for part or the whole of entitlements. These changes in entitlements are generally to be recorded as other changes in the volume of assets and liabilities, unless they are clearly driven by a price element (such as change in the estimates of entitlements due to changes in the expected levels of price indexation).

3. Transferring pension entitlements

24.187 One characteristic of the changing environment of pensions is the increasing possibility of having "portable pensions". It used to be the case that a person leaving one pension scheme had his pension frozen at that point and had to start a new pension with a new pension scheme. It is becoming more common now for a person moving jobs to be able to convert the pension entitlement with the former pension scheme to one with the new pension scheme. When this happens, the pension entitlement of the household concerned is unaffected but there is a transaction between the two pension schemes as the new one assumes the liability of the former. In addition there will be a counterpart transaction in some assets to match these liabilities. If the new pension sponsor is running a pension scheme that is actually unfunded, he may receive cash from the former pension scheme. If this cash is then used by the pension sponsor for purposes other than the pension fund, his liability to the fund increases and his use of the cash appears as net borrowing.

24.188 More generally, pension entitlements may be transferred between schemes. These transfers may be fully requited, partially requited, or non-requited. In the case of a fully requited transfer, the transfer of entitlements is accompanied by an equal transfer of funds, and the transfer of the entitlements as well as the transfer of the funds should be recorded as financial transactions. The transfer of funds may include the claim on the pension sponsor, if the pension sponsor remains responsible for the shortfall of accumulated assets. In the case of a partially requited transfer which is accompanied with a change of the unit being responsible for the shortfall, the difference between the value of the pension entitlements and the value of the transferred funds should be recorded as a capital transfer between the unit taking over the responsibility for the entitlements (i.e., the new pension sponsor) and the unit who originally had the responsibility for the scheme (i.e., the original pension sponsor).

24.189 Non-requited transfers may happen, if for example government assumes the responsibility for pension provision for the employees of a non-government unit through an explicit transaction. In such a case, a pension liability should be recorded in the balance sheet of government. If the government does not receive any matching assets in return, the increase in the government's liability is shown as a capital transfer to the non-government employer. There is further discussion of this type of arrangement in chapter 30 on General government and the public sector.

24.190 Another way in which pension entitlements may be transferred between funds is when one corporation takes over another. If the pension fund is a separate institutional unit, all that changes is control of the pension fund. If there is no separate institutional unit, assuming the takeover does not change the terms of the pension plan for existing participants, the corporation being taken over passes both the pension liabilities and the corresponding assets to the new owner.

24.191 Finally, sometimes a transfer of entitlements may involve a reduction in the value of pension entitlements. For example, in the case of an employer bankruptcy, the scheme taking over (transferring in) the pension entitlements of the bankrupt employer's scheme may only offer members a proportion of the value of the future benefits (not the full benefits). Such a reduction should be recorded as an other change in the volume of assets, and in the case the original debtor still exists, a subsequent capital transfer for the reduced value from the unit taking over the entitlements to the unit transferring out the entitlements. In case the original debtor does not exist anymore, the original entitlements should be written down in full, via an other change in volume of assets, followed by a capital transfer from the unit taking over the reduced entitlements to the beneficiaries, combined with a financial transaction in entitlements.

4. A note on the tables

24.192 For cross-reference with tables in other chapters, table 24.9 shows the itemized components of transactions pertaining to social and other insurance in tables 24.1 to 24.8 inclusive.

Table 24.9: Detailed transactions concerning social insurance

	Table number		Corporation/ Employer	Social insurance fund	Households	Other sectors	Total economy
Intermediate consumption			1		3		4
	24.1	Non-life insurance	1		3		4
Output					-13		
	24.1	Non-life insurance			-6		
	24.2	Life insurance			-4		
	24.5	Other social insurance schemes - funded non-pension benefits			-1		
	24.7	Other social insurance schemes - DC pension benefits			-1.4		
	24.8	Other social insurance schemes - DB pension benefits			-0.6		
Employers' actual social insurance contributions			181				181
	24.3	Social security non-pension benefits	15				15
	24.5	Other social insurance schemes - funded non-pension benefits	6				6
	24.6	Social security pension benefits	139				139
	24.7	Other social insurance schemes - DC pension benefits	11				11
	24.8	Other social insurance schemes - DB pension benefits	10				10
Employers' imputed social contributions			13.1				13.1
	24.4	Other social insurance schemes - unfunded non-pension benefits	9				9
	24.8	Other social insurance schemes - DB pension benefits	4.1				4.1
Household actual contributions					124		115
	24.3	Social security non-pension benefits			10		10
	24.4	Other social insurance schemes - unfunded non-pension benefits			9		
	24.5	Other social insurance schemes - funded non-pension benefits			5		5
	24.6	Social security pension benefits			87		87
	24.7	Other social insurance schemes - DC pension benefits			11.5		11.5
	24.8	Other social insurance schemes - DB pension benefits			1.5		1.5
Investment income			1.8	37.2			37.2
	24.1	Non-life insurance		6			6
	24.2	Life insurance		7			7
	24.5	Other social insurance schemes - funded non-pension benefits		4			4
	24.7	Other social insurance schemes - DC pension benefits		16.2			16.2
	24.8	Other social insurance schemes - DB pension benefits		4			4
	24.8	Other social insurance schemes - DB pension benefits	1.8				
Non-life and life insurance service charges paid					6		6
	24.1	Non-life insurance			2		2
	24.2	Life insurance			4		4
Social insurance scheme service charge					3		-1
	24.5	Other social insurance schemes - funded non-pension benefits			1		1
	24.6	Social security pension benefits					
	24.7	Other social insurance schemes - DC pension benefits			1.4		-1.4
	24.8	Other social insurance schemes - DB pension benefits			0.6		-0.6
Social insurance benefits				290			290
	24.3	Social security non-pension benefits		22			22
	24.4	Other social insurance schemes - unfunded non-pension benefits		9			9
	24.5	Other social insurance schemes - funded non-pension benefits		7			7
	24.6	Social security pension benefits		210			210
	24.7	Other social insurance schemes - DC pension benefits		26			26
	24.8	Other social insurance schemes - DB pension benefits		16			16
Adjustment for the change in pension and non-pension entitlements				12.3			12.3
	24.5	Other social insurance schemes - funded non-pension benefits		-2			-2
	24.7	Other social insurance schemes - DC pension benefits		11.3			11.3
	24.8	Other social insurance schemes - DB pension benefits		3			3
Claims of pension funds on pension sponsors				5.9			5.9
	24.8	Other social insurance schemes - DB pension benefits		5.9			5.9

K. A supplementary table for pension schemes

24.193 In recognition of the fact that social security is normally financed on a pay-as-you-go basis, entitlements accruing under social security (both pensions and other social benefits) are not normally shown in the SNA sequence of economic accounts. If all countries had similar benefits provided under social security and under other social insurance pension schemes, international comparisons would be relatively straightforward. However, as pointed out at in section H, this is far from being the case and national perceptions of exactly what is covered by social security vary considerably.

24.194 There are two problems with simply suggesting that entitlements from social security should be shown in the sequence of economic accounts. The first is that reliable estimates of the entitlements may not be readily available whereas it is increasingly the case that such estimates exist for other social insurance pension schemes. Secondly, there is an argument that such estimates are of limited usefulness where government has the possibility of changing the basis on which entitlements are determined in order to keep the entitlements within the bounds of what is budgetarily feasible. However, the consequence of simply accepting that entitlements for other social insurance pension schemes are shown and for social security are not, is that some countries would include the greater part of pension entitlements in the sequence of economic accounts and some would show almost none.

24.195 In recognition of this dilemma, some flexibility regarding the recording of pension entitlements of unfunded pension schemes sponsored by government for all employees (whether private sector employees or government's own employees) is provided. Given the different institutional arrangements in countries, only some of these pension entitlements may be recorded within the sequence of economic accounts. In addition, however, a further table is to be presented that provides information on pension provision covered in the sequence of economic accounts as well as pension provision covered by the remaining schemes. The aim of the supplementary table is to provide a full picture of countries' social insurance pension entitlements of resident and non-resident households, and related (constructive) liabilities of the pension providers. It is a requirement, though, that a set of criteria be provided to explain the distinction between those schemes carried forward to the sequence of economic accounts and those recorded only in the supplementary table.

24.196 The sort of criteria that might be considered are the following. Where a pension scheme provided by government or a public corporation in its role as an employer is clearly separated from social security pension schemes, the closer that the pension scheme is to the prevailing pension arrangements provided by private employers, in the sense of being derived from an employer-employee relationship with similar terms and conditions of compensation, both current compensation and future compensation after retirement, the more likely it is to appear in the sequence of economic accounts. Furthermore, the less the benefits are tailored to the specific characteristics of the individual and the more they are applicable to the population at large, the less likely it is to appear in the sequence of economic accounts. Also the ability of government to alter the benefit formula would make it less likely that the entitlements would be recognised in the sequence of economic accounts. However, none of these criteria alone is necessarily decisive in determining whether the scheme is treated in the core accounts or not.

24.197 By making the supplementary table and annotation a requirement for international reporting, analysts have the possibility of ensuring that cross country comparisons are not unduly clouded by the institutional variations from country to country.

24.198 The supplementary table is shown in table 24.10. As well as the possibility of including less robust estimates for countries with large social security sectors, the possibility will also exist of working back to a narrower coverage of private pensions for all countries being analysed.

Table 24.10: A supplementary table on social insurance pension schemes

Row number	Recording	Within the sequence of economic accounts								Outside the sequence of economic accounts		
	Pension sponsor	Non-general government			General government							
						Defined benefit schemes for general government employees						
	Position / transaction / other flow	Defined contribution schemes	Defined benefit schemes	Total	Defined contribution schemes	In the financial corporations sector	In the general government sector	In the general government sector	Social security pension schemes	Total pension schemes	Pension entitlements of resident households
	Column number	A	B	C	D	E	F	G	H	I	J
	Opening balance sheet										
1	Pension entitlements										
	Transactions										
2	Increase in pension entitlements due to receipt of social contributions										
2.1	Employers' actual social contributions										
2.2	Employers' imputed social contributions										
2.3	Household actual social contributions										
2.4	Household social contribution supplements										
2.5	Less: Pension scheme service charges										
3	Other (actuarial) change of pension entitlements in social security pension schemes										
4	Decrease in pension entitlements due to payment of pension benefits										
5	Changes in pension entitlements due to social contributions and pension benefits										
6	Transfer of pension entitlements between schemes										
7	Changes in pension entitlements due to negotiated changes in scheme structure										
	Other economic flows										
8	Changes in pension entitlements due to revaluations										
9	Changes in entitlements due to other changes in volume										
	Closing balance sheet										
10	Pension entitlements										
	Related indicators										
	Output										
	Assets held by pension schemes at end-year										

Empty cells show where entries appear in the sequence of economic accounts. Black cells show where no entry is appropriate. Grey cells show where information is provided in the supplementary table only.

Row 2 is the sum of rows 2.1 to 2.5

Row 3 is the analogue of employers' imputed contributions in the case where government has assumed the ultimate responsibility for any shortfall in pension provision

Row 5 is the sum of rows 2 and 3 less 4

More information on the components underlying rows 8 and 9 to be shown in a further supplementary table to allow an assessment of the degree of uncertainty in these estimates.

24.199 As noted above, providing detail on defined contribution schemes is relatively straightforward since full accounts must be available and no actuarial estimation is involved. Most of these are in the corporations' sectors (column A), but it is also possible that some government employees may be covered by them (column D). All defined contribution pension schemes should be included in the sequence of economic accounts. Estimates for all defined benefit pension schemes outside social security should also be included (column B).

24.200 Government schemes for their own employees where separate accounting information, distinct from social security, is shown in the sequence of economic accounts appear in columns E and F. Column E shows schemes administered by an insurance corporation, or a separate institutional unit, and column F those administered by government itself. Any government schemes for their own employees distinct from social security for which the pension entitlements do not appear in the sequence of economic accounts, are shown in column G. The sum of columns E, F and G therefore show the total responsibility of government for pension provision for their own employees. Column H relates to social security schemes. Column C shows the total of all non-government schemes and column I the total of all schemes including social security.

24.201 For the most part, the beneficiaries of pension schemes are likely to be resident households. In some countries, though, the number of non-resident households receiving pension benefits may be significant. In this case, column J should be added indicating the amount of the total that concerns non-resident households.

24.202 Some of the entries in the rows of columns G and H, specifically the actual contributions made by both employers and employees and benefits received, appear in the sequence of economic accounts, even though the entitlements and change in entitlements do not. Other entries in the columns for G and H are only shown in the supplementary table. These are shaded in the table indicating that these entries do not appear in the sequence of economic accounts, and explained below.

24.203 The imputed contribution by employers for those government schemes for which entitlements appear in column G but not in the sequence of economic accounts requires special consideration. In the sequence of economic accounts, this item is calculated, by convention, as equal to the difference between current benefits payable and actual contributions payable (by both employees and employers). In the supplementary table, this is replaced by the amount needed to ensure the total contributions, actual and imputed, by both employers and employees, covers both the increase in pension entitlements from current service and the costs of operating the scheme. Therefore, the imputed employer contributions row is measured as a balancing item: it captures any changes in entitlements over the year not included in other rows of the table.

24.204 An item calculated on the same basis in respect of social security (column H) is shown in row 3 as "other (actuarial) accumulation of pension entitlements in social security funds". The distinction from employers' imputed social contributions is deliberate and is intended to emphasize the probable fragility of these estimates.

24.205 Items for household social contribution supplements and the other changes in entitlements are shown on the same bases as for defined benefit schemes as recorded in the sequence of economic accounts; see paragraphs 24.157 to 24.169.

24.206 Changes in pension entitlements due to transfers of entitlements between schemes are recorded as transactions in the supplementary table (as in the sequence of economic accounts).

24.207 Changes in pension entitlements are recorded as transactions, more specifically capital transfers (in relevant cases to be routed via the pension fund involved), as follows:

a. If the pension scheme is included in the sequence of economic accounts, and the pension sponsor agrees a change in the terms of pension entitlements via negotiation with the affected participants, this change should be recorded as a transaction in the sequence of economic accounts.

b. If the pension scheme is not recorded in the sequence of economic accounts, and the pension sponsor agrees a change in the terms of pension entitlements via negotiation with the affected participants, this change should be recorded as a transaction in the supplementary table.

c. In the case of social security, if changes in entitlements are agreed in parliament, this is also recorded as if it is negotiated in the supplementary table.

24.208 Changes in pension entitlements that are imposed without negotiation are recorded as other changes in the volume of assets and liabilities.

24.209 The difference in the type of recording is one of principle but it is recognized that the distinction between what is negotiated and what is imposed without negotiation will be difficult to determine in practice with different situations prevailing in different countries.

24.210 In addition to having a supplementary table on social insurance pension schemes, it could be considered to compile a supplementary table on household retirement resources. Such a table would focus on resident households. Moreover, it would not only include entitlements related to social insurance, both the ones recognised and the ones not recognised in the sequence of economic accounts, but could also include other types of retirement products, such as saving accounts with or without special fiscal arrangements. It could also be extended with the value of dwellings or other accumulated wealth items, which are often used to compensate for the drop in income after retirement. The development of such a table has been put on the research agenda of the 2025 SNA, as the table would need further elaboration, especially in relation to arriving at a table which can provide adequate international comparisons.

Chapter 25: Selected issues in financial instruments

A. Introduction

25.1 This chapter provides additional details on specific financial instruments, as a supplement to chapter 12 on Financial account, chapter 13 on Other changes in assets and liabilities accounts and chapter 14 on Balance sheet. It also touches on issues related to the recording of flows associated with financial assets and liabilities in the broader sequence of economic accounts.

25.2 The chapter first covers standardized guarantees, discussing both the concept and the treatment of these guarantees as well as discussing some common types of guarantees. It then provides an exposition on financial derivatives, focusing on the definitions, conventions, classifications, as well as the valuation of these instruments. This is followed by a section on employee stock options. Finally, this chapter provides some guidance on the recording of flows in financial instruments.

B. The treatment of standardized guarantees

1. Overview of guarantees

25.3 A guarantee is an arrangement whereby one party, the guarantor, undertakes to protect asset holders and/or debtors in the case of events (sometimes unforeseen) such as one party's financial impairment. Often a fee is payable for the provision of a guarantee, though the form of this varies by type.

25.4 As a simple example, a loan guarantee is normally an arrangement whereby the guarantor undertakes to a lender that if a borrower defaults, the guarantor will make good the loss the lender would otherwise suffer. In other words, the guarantor will compensate the creditor for the loss of the principal amount and any accrued interest with respect to the loan balance in default. Sometimes the guarantor will acquire some rights over the defaulting borrower. Other types of guarantees with similar characteristics may be offered in respect of other financial instruments, including deposits. This section refers to guarantees on different financial instruments.

25.5 Guarantees have a significant impact on the behaviour of economic agents, both by influencing their decisions on production, income, investment or saving and by modifying the lending and borrowing conditions on financial markets. Some borrowers and depositors might have no access to loans or be unwilling to make deposits in the absence of guarantees. Guarantees are particularly significant for the general government sector and for the public sector as government activities are often linked to the issuance or activation of guarantees.

Classes of guarantees

25.6 Three classes of guarantees are recognized. No special treatment is proposed for guarantees in the form of manufacturers' warrantees or other form of guarantee. (The cost of replacing defective merchandise is an intermediate cost of the manufacturer.)

25.7 The first class of guarantees is composed of those guarantees provided by means of a financial derivative, such as a credit default swap. These derivatives are actively traded on financial markets. The derivative is based on the risk of default of a reference instrument or item, but it does not share the characteristics of standardized guarantees. This sort of financial derivative is discussed later in this chapter.

25.8 The second class of guarantees are one-off guarantees. These consist of those where the loan or the security, or the events giving rise to the guarantee, are so particular that it is not possible for the degree of risk associated with the debt to be calculated with any degree of accuracy. In most cases, the granting of a one-off guarantee is considered a contingency and is not recorded as a financial asset/liability. If a fee is charged, this is recorded as a payment for a service at the time of payment. If a call is made under a guarantee, a capital transfer (for the difference between the call amount and the fair value of the recoverable retained) is recorded

from the guarantor to the guarantee holder at the time of default.

25.9 A specific type of one-off guarantee is the implicit guarantee that can occur in times of financial instability (e.g., the financial crisis, the pandemic), where governments may decide that one or more financial corporations are "too large to fail". These types of one-off guarantees are typically granted by governments to corporations in certain well-defined financially distressed situations and have a very high likelihood of being called. The guarantees are called when the financial distress is recognized and are then treated similarly to other one-off guarantees. One-off guarantees are discussed in more detail in chapter 30 on General government and the public sector.

25.10 The third class of guarantees, standardized guarantees, is the focus of this section. These are comprised of the sorts of guarantees that are usually issued in large numbers for fairly small amounts, and along identical lines. As with all guarantees there are three parties involved in these arrangements, the debtor, the creditor, and the guarantor. Either the debtor or creditor may contract with the guarantor to repay the creditor if the debtor defaults. Here, although it is not possible to establish the likelihood of any one debtor defaulting, it is standard practice to estimate how many out of a batch of similar debts will default. In this sense, the general probability of default can be established. Such guarantees can be generically defined as arrangements whereby the guarantor has an obligation to pay a third-party beneficiary when another institutional unit fails to perform certain contractual obligations.

25.11 Standardized guarantees are to be distinguished from one-off guarantees based on two criteria: (i) they are characterized by often repeated transactions with similar returns and pooling of risks; (ii) guarantors can estimate the average loss based on available statistics by using a probability-weighted concept. One-off guarantees are, on the contrary, individual, and guarantors are not able to make a reliable estimate.

25.12 If the guarantor is working on purely commercial lines, they will expect all the fees paid, plus the investment income earned on the fees and any reserves, to cover the expected defaults along with the costs and leave a profit. This is the same approach as for non-life insurance and a similar treatment is adopted for these standardized guarantees. This involves including transactions and balance sheet items in the same way as those for non-life insurance, including the generation of output and payments of a fee supplement and a service fee by those taking out the guarantees.

25.13 The treatment of standardized guarantees follows.

2. Standardized guarantee schemes

Basic concepts

25.14 Standardized guarantees may be provided by a financial corporation, including but not confined to insurance corporations. They may also be provided by government units. It is unlikely that non-financial corporations may provide these sorts of guarantees. It is also unlikely that they would be initially provided by any unit to a non-resident unit, although with student loans the borrower may relocate abroad upon completion of their studies. In certain instances, transnational organizations may be involved in standardized guarantees. As indicated above, standardized guarantee schemes have much in common with non-life insurance. In the general case, similar recording is recommended as described below.

25.15 When a unit offers standardized guarantees, it generally accepts fees (for exceptions, see paragraphs 25.30 to 25.33) and incurs liabilities to meet the call on the guarantee. The value of the liabilities in the accounts of the guarantor is conceptually equivalent to the present value of the expected calls under existing guarantees, net of any recoveries the guarantor expects to receive. The liability is entitled provisions for calls under standardized guarantees, and it consists of prepayments of fees less service charges and provisions to meet outstanding calls under standardized guarantees.

25.16 Standardized guarantees can be limited or unlimited. If unlimited, it ensures that the party benefiting from the guarantees receives full compensation in the event of a default. If the guarantee is limited, the guarantor has only insured for a loss up to a certain amount.

25.17 The nature of the standardized guarantee scheme is that there are many guarantees of the same type, though not all for exactly the same time period nor all starting and finishing on the same dates. A guarantee may

cover a multiyear period, with a fee payable annually or upfront. In principle, the fee should represent charges earned in each year the guarantee holds with the liability decreasing as the period gets shorter. As a result, the same sort of recording should be followed here as for annuities, with the fee paid earned as the future liability decreases. This is the preferred approach but, in practice, some units operating guarantees may have data only on a cash basis. While the ideal approach in such cases would be to recognize the guarantee fee over multiple periods, when this cannot be done then a cash accounting approach will have to be accepted. While this would be inaccurate for an individual guarantee, it is acceptable for standardized guarantees where there is a steady flow of many guarantees granted. Unless there is reason to suppose that there is a major change in the nature of the guarantee holders over time, using cash-based data should not introduce significant error.

25.18 An noted in paragraph 25.15, the guarantors would record a liability for "provisions for calls under standardized guarantees schemes" on its balance sheet account, and this amount would evolve over time. The corresponding asset would be reflected on the books of the guarantee holder (creditor/lender). Conceptually, it could be argued (at least, for marketable instruments) that the total value of the instruments under guarantee on the balance sheet of the holder should be reduced by the extent of provisions for standardized guarantees which are estimates of the amount of borrowers' debt that will be in default. However, this approach undermines the interpretation of stated balance sheet values, as the debtor remains contractually obliged to pay the full amount unless the debt is either forgiven or written off. This is consistent with the treatment of provisions for loan default which are not deducted from loan balances. In any case, this amount in provisions is not generally to be significant compared with the total value of the instrument holdings concerned.

25.19 Altogether, six sets of transactions need to be recorded in respect of standardized guarantee schemes: two relating to the measurement of the production and consumption of the guarantee service, three relating to distribution of income and one in the financial account. The value of the output of the activity, the investment income to be attributed to the guarantee holder (whether creditor or debtor) and the value of the service charges are calculated in the manner for non-life insurance, as described in chapter 24 on Insurance and pensions, with the concepts of fees replacing premiums and calls under a standardized guarantee scheme replacing claims.

25.20 The production and consumption transactions are as follows:

a. The output is recorded in the production account of the sector or subsector to which the guarantor belongs.

b. The service may be paid for by either the borrower or the lender of the debt being guaranteed. When non-financial corporations, financial corporations, general government or non-profit institutions pay fees to obtain this sort of guarantee, the service part of the fees constitute intermediate consumption, recorded in their production account. The corresponding expenses for such guarantees payable by households are part of final consumption expenditure, recorded in the use of income accounts.

25.21 The distributive transactions cover investment income attributed to guarantee holders in respect of standardized guarantee schemes, fees less service charges, and calls under standardized guarantee schemes.

a. Investment income associated with the provision for calls under a standardized guarantee scheme (that is, on the technical reserves of the scheme) is recorded as payable by the guarantor and as receivable by the unit paying the fee. Both payables and receivables are recorded in the earned income account.

b. Fees less service charges are calculated as fees receivable plus fee supplements equal to the investment income attributed to the unit paying the fee for the guarantee less the value of the services consumed. These fees are payable by all sectors of the economy and receivable by the sector of the guarantor.

c. Calls under standardized guarantee schemes are payable by the guarantor and receivable by the lender of the debt under guarantee, regardless of whether the fee was paid by the lender or the borrower. Both fees less service charges and calls are recorded in the transfer income account. This treatment is analogous to non-life insurance.

25.22 In the financial account of the relevant parties, the entry for provisions for calls under standardized guarantee schemes show the difference between receipt/payment of fees less service charges for new guarantees and

calls made under existing guarantees. When a standardized guarantee is activated during its lifetime, the liability of the debtor is written off (or written down) by the creditor in the other changes in assets and liabilities account.

Some common types of standardized guarantees

25.23 As noted above, standardized guarantees can be offered by private sector units or public sector units. In the former case, these are most often insurance companies, although it may also concern related corporations such as a parent/affiliate or a holding company in the same economy (usually for providing guarantees on instruments like trade receivables). In the latter case, guarantors are either government bodies themselves or public corporations. Each of these types of units may offer various standardized guarantees. What types of such guarantees are offered can differ across countries, based on demand, financial stability concerns, or more general public policy.

25.24 Export credit insurance is a standardized guarantee that functions to ensure that exporters receive payment for goods shipped abroad in the event of foreign customer default, thus reducing business risks. This helps promote exports, and it may also lead to more competitive prices for exporters. Such an agency is typically a public sector unit (export development agency).

25.25 There are various types of loan guarantees, applicable on different loan instruments and offered by public or private sector guarantors. (See *FPFS* for a detailed example of loan guarantees.)

25.26 Guarantees on loans can protect the creditor and support the debtor, but these contracts can be structured in different ways to meet policy or income objectives. This can include insurance on consumer or business installment loans, primary mortgages and secondary mortgages. This type of insurance can be optional or mandatory. Two examples may provide further clarification. Firstly, in some economies, there may be mortgage insurance arrangements to promote home ownership with public sector units involved (and there may be an approved list of lenders), or such insurance arrangements may competitively emerge in the mortgage market. Essentially, the guarantor assumes the responsibility for the debt if the owner defaults, but the guarantor may also have a residual claim on the property in case of default. Such arrangements may involve situations where a prospective homeowner has a smaller downpayment than normally required by the lender. The lender typically pays a premium to the guarantor (based on mortgage size and/or the downpayment), while passing the cost onto the borrower.

25.27 Secondly, there can also be standardized guarantees associated with homeowners drawing on the value of their property for various purposes. These include lines of credit where minimum monthly payments of principal and interest are required. In these instances, it is more likely that the guarantor is a private insurance corporation, and the fees are paid by the borrower as part of the regular payments and are tied to the current outstanding balance of debt.

25.28 In some countries, with the objective of promoting higher education, student loans from private lenders are supported by standardized guarantees. In these instances, usually a government unit assumes the role of guarantor.

25.29 Debt securities can also be subject to standardized guarantees, where the timely principal and interest payments are guaranteed by a third party in the case of issuer default. The guarantor can be a government unit in the case of guaranteed debt securities of units such as with public corporations, municipal governments, universities, or hospitals. Although less common, guarantors can also be private insurance companies, deposit-taking corporations or affiliated companies. These types of arrangements make for safer investments and can help to secure favourable terms for issuers.

25.30 Deposit insurance schemes act to ensure trust in the banking system, thus helping to promote a sound financial system. This is another type of standardized guarantee that is offered in many economies and/or regions. The provision of deposit insurance has expanded since the financial crisis that began in 2007-2008. Such standardized guarantees are usually offered by a public corporation or agency, sometimes associated with a central bank, but can also be offered by transnational institutions. Deposit insurance offers limited (up to a certain amount and/or restricted to certain types of deposits) or unlimited protection to depositors in the case of a failure of a deposit-taking corporation. In these cases, the member deposit-taking corporation is

typically responsible for the annual premium on insured deposits payable to the guarantor. Member institutions may be classified by risk (e.g., liquidity) by the guarantor for premium establishment purposes, as part of assessing the statistical likelihood of calls. In this sense, it is somewhat different from other types of standardized guarantees. Deposit insurance schemes, however, are not necessarily in the form of a standardized guarantee. In some economies, the annual premium on insured deposits is deemed to be a tax. Here, the existence of a fund functioning on insurance rules with a full set of accounts may indicate the provision of an insurance-type service, while in the case that the payments are not put aside, can be used for other purposes, or are compulsory as part of a mandatory regulatory scheme from which the financial corporation cannot opt out, would indicate a treatment of the payments as taxes (see paragraph 8.84).

Standardized guarantees provided by government or public corporations

25.31 Governments often offer guarantees for specific policy purposes, and their activity in certain areas can be significant. Student loan guarantees are one example. The guarantees may be issued by a government unit that can be treated as a separate institutional unit. When this is so, the normal rules for the allocation of government units to either public corporations or general government apply.

25.32 If a guarantee unit charges fees that are economically significant (in this case this may be equivalent to saying that most of the calls plus the administrative costs are covered by the fees charged), then this is a market activity. It should be treated as a private or public financial corporation, depending on ownership, and transactions should be recorded as described in paragraphs 25.20 and 25.21. If the fees cover most but not all the costs, this recording also applies, with the guarantor usually being classified as a public corporation. The loss made by the agency offering the guarantees may be covered by the government, on a regular or intermittent basis, but this is not passed on to those seeking the guarantees as a subsidy. Regular payments are recorded as a subsidy to the agency and intermittent payments, covering cumulated losses, are recorded as capital transfers only when such payments are made.

25.33 In general, when a government unit provides standardized guarantees without fees or at such low rates that the fees are significantly less than the calls and administrative costs, the unit should be treated as a non-market producer within general government. If government recognizes the probability of having to finance some of the calls under the guarantee scheme to the extent of including a provision in its accounts, a capital transfer of this size from government to the units concerned and a liability of this amount (under provisions for calls under standardized guarantees) should be recorded.

C. Financial derivatives

1. Basic concepts and terminology

25.34 Financial derivatives are, in part, a response to both risks and uncertainties in the economic and financial environment and are used for hedging as well as investment/speculation purposes. They constitute a category of financial instruments with the distinguishing feature that they involve contracts that are determined in relation to the future values of a specified financial instrument, indicator or physical items, under definitions that are precisely stated and agreed between the parties to the contract. They enable the economic risks of future outcomes in the reference markets to be transferred from one party to another in precise, standardized ways that can be highly flexibly implemented, reversed or otherwise varied. Financial derivatives enable parties to transfer large amounts of economic risk at little or no up-front cost. This has consequences that may be regarded sometimes as benign, such as when a party can use a financial derivative product to hedge against a risk that it does not want; or sometimes as potentially more precarious, such as when a party can readily establish a considerable speculative position in a dimension of risk.

25.35 More specifically, following the definition in chapter 12 on Financial account, financial derivatives are financial instruments that are linked to another specific financial instrument or indicator or commodity, through which specific financial risks (foreign exchange or interest rate risk, equity or commodity price risk, credit risk, etc.) can be managed – that is, traded in their own right on financial markets. The risk embodied in a financial derivative contract can be managed by trading the contract itself in the case of exchange-traded contracts; or the risk can be offset in the case of over-the-counter contracts.

25.36 Financial derivatives constitute contractual arrangements whose values change in response to price movements in a primary asset or indicator – referred to as the reference price. In other words, the value of a derivative contact is derived from the primary item. This underlying item can include currencies or exchange rates, agricultural commodities, crypto assets or stock market indices, precious metals, debt securities, interest rates, and a basket of prices or a spread between prices, and other financial derivatives. As such, an observable current value (market price or index) for the underlying item is generally required to construct a derivative contract and to calculate the value of the derivative over the term of the contract. However, financial derivatives are separate assets from the primary item.

25.37 Two key characteristics of derivative contracts are that usually no up-front payment or a small up-from payment (e.g., premiums on options) is advanced, and no investment income accrues. Further, no principal amount is advanced, except for foreign currency swaps where notional amounts may be exchanged at the beginning and end of the agreement. While some contracts are settled by delivery of the underlying items (e.g., foreign currencies, commodities), in many or most cases contracts are settled by payments of net amounts in cash. A distinct advantage of derivative contracts is that they allow for the replication of positions in various items at a much lower cost, due to their leveraged nature. This is because any cash outlay for initiating these contracts is considerably less than taking a similar position in the underlying item. While some contracts (e.g., options) charge a premium at contract inception, most types of derivative contracts have no initial cost.

25.38 Financial derivatives are used for several purposes, and the parties to a derivative transaction may have different motives, including hedging, speculation, arbitrage, and general risk management. One party may be hedging, while the other may be dealing in derivative instruments or acquiring the derivative as an investment. Even if both parties are hedging, they may be hedging transactions or risks that involve different financial assets or even transactions in different accounts. Therefore, if derivative transactions were treated as integral parts of other transactions, such treatment would lead to asymmetries of measurement in different parts of the accounts or to asymmetries/imbalances of measurement between institutional sectors.

25.39 Whatever the motive, there are some common considerations for the investors. For example, hedging involves taking positions in items negatively correlated with a given risk. For this, the investor determines the size of the derivative position to be taken to reduce the risk exposure by a desired amount, considers that the reference price can fluctuate over the course of the contract, and accounts for any associated opportunity costs. On the other hand, speculation involves taking a position to make gains from anticipated, but uncertain, price movements. And, in this case, similar expectations and factors are accounted for on the part of both parties involved, though they may have different expectations about the future value of the underlying item.

25.40 There are two main classes of derivative instruments: forward-type contracts and option-type contracts. That said, there are many types of sub-instruments (including hybrid derivatives) as well as different ways by which to classify derivative instruments. Certain types of financial derivatives are exchange traded (i.e., bought and sold on exchanges), while others are not. For example, futures contracts are exchange traded forward-type contracts, while other forward-type contracts are traded over the counter. Notably, the over-the-counter market can offer more customized contracts to investors.

25.41 Forward-type contracts can be contrasted with option-type contracts in that:

a. at inception, there is usually no up-front payment for a forward-type contract and, when initiated, the derivative contract begins with zero value, whereas there is usually a premium paid for an option representing a non-zero market value for the contract;

b. during the life of the contract, for a forward-type contract, either party can be creditor or debtor, and it may change, whereas for an option-type contract, the buyer is always the creditor, and the writer is always the debtor, except for a credit default swap (as either party to a credit default swap can be a creditor or debtor);

c. at maturity, redemption is unconditional for a forward-type contract, whereas for an option-type contract it is determined by the buyer of the option.

25.42 The most highly standardized forms of financial derivatives are those products that are transacted on organized futures and options exchanges according to numerous contractual conventions, such as contract size, exercise dates and specified reference products. Such standardization promotes the liquidity of financial

derivative positions. Exchange-traded contracts are fixed in terms of denomination and maturity dates, and they have a market valuation. The exchange makes the contracts highly liquid.

25.43 Outside of organized exchanges, more bespoke over-the-counter products, allow for greater flexibility and will be more suitable to end-users such as non-financial corporations. But even for these derivatives the use of master legal agreements and recognized market conventions enables there to be a substantial degree of standardization, promoting liquidity while minimizing unintended risks. Over-the-counter markets exist when there is no central trading facility, such as a stock exchange, and contracts are arranged through an inter-dealer market (over-the-counter market). In many countries, banks and investment dealers negotiate contracts, acting on their own behalf as “market makers” or as representatives of clients. Over-the-counter contracts can be more customized to meet the needs of the investors than exchange-traded contracts, however they are less liquid than exchange-traded contracts and may or may not be cleared and subject to margins.

25.44 An essential characteristic of financial derivative contracts is that the risk embodied in a derivative can be “traded”. This occurs either by trading the contract itself on an exchange for futures or options, where ”buying” and ”selling” the contract results in two countervailing positions (often referred to as "unwinding"), or by creating a new contract that embodies risk characteristics that match, in a countervailing manner, those of the existing contract. The latter is generally termed “offsetability” and is used in over-the-counter markets. Offsetability means that it is often possible to eliminate the risk associated with a derivative contract by creating a new “reverse” contract having characteristics that countervail the risk underlying the first derivative. This is the functional equivalent of selling the first contract, in terms of eliminating the underlying financial risk. This practice is particularly common in forward markets, in cases where there are no formal exchanges through which to trade derivatives.

Exclusions from financial derivatives

25.45 For clarity, it is worth noting items or financial arrangements that are not financial derivatives, but that are sometimes confused with derivatives. Insurance contracts and standardized guarantees (section B) are not derivatives, as they manage risk by pooling. Contingent assets and liabilities, such as one-off guarantees and letters of credit, are neither assets according to the definition of the integrated framework of the SNA, nor derivatives. Although repurchase agreements or reverse repurchase agreements (see paragraphs 12.80 to 12.83) involve a future commitment, they are not derivatives. The same can be said of business timing delays, that may entail exposure to price movements. A fixed-price contract for goods and services does not constitute a derivative, unless that contract is standardized, so that the market risk can be traded in financial markets in its own right. Gold swaps and central bank swap arrangements (see paragraph 12.84) are also not financial derivatives.

25.46 Instruments with “embedded derivatives” are also excluded. An embedded (or non-detachable) derivative arises when a derivative feature is inserted in a standard financial instrument and is inseparable from the instrument. Examples include bonds that are convertible into shares and securities with options for repayments in different currencies from the currency of issuance.

25.47 Subscription rights are classified as equity rather than financial derivatives, since the sum of the value of the shares after the subscription issuance and that of the subscription rights represent the total value of the corporation that issued the subscription rights.

2. Overview of types of financial derivatives

Forward-type contracts

25.48 Chapter 12 on Financial account defines a forward-type contract as an unconditional financial contract that represents an obligation for settlement on a specified date. Forward contracts and futures are typically, but not always, settled by the payment of cash or the provision of some other financial instrument rather than the delivery of the underlying item. They are valued and traded separately from the underlying item. At the inception of a forward-type contract, risk exposures of equal market value are exchanged, so a contract typically has zero market value. As the price of the underlying item changes, the contract’s market value will also change (although it may be restored to zero by periodic settlement over the life of the forward). This

means that the forward-type contract may switch between asset and liability positions, unlike standard option-type contracts.

25.49 Futures are exchange traded forward-type contracts where two parties agree to exchange a specified quantity of an underlying item, whether financial or non-financial (e.g., energy, grain, livestock, currencies, stock indices, securities) at a particular price and for a period of time or subsequent date. These are standardized contracts: the details are specified in contracts common to all participants and they are traded on an organized futures exchange. For example, bond futures represent an obligation to the holder to purchase or sell a bond (typically government debt securities) on a specified date at a predetermined price and can be used for both hedging and speculating purposes. The exchange facilitates trading by determining the standardized terms and conditions of the contracts, acting as the counterparty to all trades, and requiring margin to be deposited to mitigate risk. It is quite common that investors do not wish to obtain the item upon which the future is based, so they do not hold the contracts to maturity. This has led to robust secondary markets for futures. The clearinghouse function of the exchange makes it easy to unwind futures' positions prior to the settlement date. Unwinding is engaging in a second contract that takes a directly opposite position to the first.

25.50 There are also various over-the-counter forward-type contracts (e.g., foreign currency contracts, forward rate agreements, swaps), but all involve exchanging assets, income flows, or commodities at a specified price (the "strike" price) on a specified future date. A swap contract involves counterparties exchanging, in accordance with prearranged terms, financial instruments or cash flows based on the reference rates of the underlying items. Over-the-counter forward contracts can be customized to meet investors' needs. They may not always be marked to market each day, and some do not require margins. These types of contracts normally cannot be traded but they can be offset. For foreign currency financial derivative contracts that could involve the exchange of principal (e.g., foreign currency swaps and foreign currency forwards), the amount of foreign currency to be delivered at maturity is not recorded on balance sheets.

25.51 Some examples of forward-type contracts are listed below.

a. A "foreign currency forward" involves two parties who agree to transact in foreign currencies at an agreed exchange rate in a specified amount at some agreed future date. Take, for example, an importer of goods, who has signed a contract to purchase those goods in one year from now. If the agreement specifies payment for the goods upon delivery, the importer will pay for the goods in the relevant foreign currency on the future settlement date. This involves a risk from fluctuations in exchange rates. If the domestic currency depreciates in the meantime, the import costs will be higher. The importer can hedge this risk by entering into a foreign currency forward contract to buy the required foreign currency at a specified price (perhaps at the known current exchange rate which may be acceptable from a cost perspective) when his payment is due. The counterparty to this derivative contract might be an investor who is speculating on an opposite movement in the exchange rate. Another example of a foreign currency forward contract would be a debtor with foreign currency debt and periodic payments of interest and principal seeking to minimize exchange rate risks. In these types of contracts, either party can record unrealized holding gains and/or losses related to exchange rate fluctuations over the duration of the contract.

b. A "foreign currency swap" involves a spot sale/purchase of currencies and a simultaneous forward purchase/sale of the same currencies. In effect there are two separate transactions, the first at the spot rate and the second at the forward price. There can also be periodic interest-like payments on the principal currency amounts (see paragraph 25.73), and sometimes principal payments. In this instance, the strike price could be set to the current exchange rate with similar results to the foreign currency forward contract above.

c. A "cross-currency interest rate swap", sometimes also known as a cross-currency swap, involves an exchange of cash flows related to interest payments and an exchange of principal amounts at an agreed exchange rate at the end of the contract. More simply, interest (at either fixed or flexible rates) and principal payments in one currency are exchanged for interest and principal payments in another currency. The locked in exchange rate means that the contract can experience holding gains and losses over its duration.

d. An "interest rate swap contract" involves an exchange of cash flows related to interest payments or receipts in one currency, over a period of time, on a notional amount of principal (which is never

exchanged). Settlements are often made through net cash payments from one counterparty to the other. One use of such a contract is the virtual conversion of fixed rate debt into floating rate debt. The outcome is the re-channeling of interest flows on the debt that the parties have previously negotiated. The creditors would be unaffected by this contract, and each party remains responsible for servicing its own debt. The main purpose is the opportunity to alter the cash flows associated with existing financial assets or liabilities. Other uses of interest rate swaps are to reduce the cost of financing by exploiting a comparative advantage in borrowing and or credit conditions, or for speculative purposes.

e. A "forward interest rate agreement" is a single currency arrangement in which two parties, to protect themselves against interest rate changes or for other purposes (e.g., speculation, arbitrage), agree on an interest rate to be paid at a specified settlement date based on a notional amount of principal that is never exchanged. Forward interest rate agreements are settled by net cash payments. The only payment that takes place is related to the difference between the agreed forward interest rate and the prevailing market interest rate at the time of settlement. One party to the forward interest rate agreement receives payment from the other party if the prevailing rate exceeds the agreed rate or if the prevailing rate is lower than the agreed rate.

f. An "equity swap" is an exchange of future cash flows between two parties, where for one side the payments are based on a stock price or index and for the other side payments can be based on a fixed or floating rate or another stock price or index.

Off-market swaps

25.52 An off-market swap has a debt component associated with it. The economic nature of this arrangement is a combination of a loan (the non-zero value provided to/from the counterparty at inception) and a financial derivative as an on-market swap. The off-market swap has a non-zero value at inception as reference rates are priced differently from market values (i.e., off the market), and produces two positions to be recorded: the loan and the financial derivative. Future streams of flows relating to these positions are also split between those relating to the loan component and those relating to the financial derivative component. Examples of swaps contracts that may involve off-market reference rates include interest rate and currency swaps.

Option-type contracts

25.53 Chapter 12 on Financial account defines options as contracts that give the purchaser of the option the right, but not the obligation, to buy (a "call" option) or to sell (a "put" option) a particular financial or non-financial item at a pre-determined price (the strike price), either within a given time span for American option type or on a given date for a European option type. The "premium leg" in standard put and call options is a fixed payment (premium) from the buyer to the seller at inception. When the option's strike price is equal to the current market value of the underlying item, it is considered "at the money", and when it is not, it is considered either "in the money" or "out of the money". Many options contracts, if exercised, are settled by a cash payment rather than by delivery of the underlying items to which the contract relates. This single payment at maturity is called the "contingent leg" of the options-type contract, and its value depends on the price of the underlying item.

25.54 Options are sold or "written" on many types of underlying items such as equities, interest rates, foreign currencies, debt securities, commodities, futures contracts and specified indices. The buyer of the option pays a premium (the option price) to the seller for the latter's commitment to sell or purchase the specified amount of the underlying financial or non-financial item on demand of the buyer. However, option contracts frequently expire without having any value; options are exercised only if settling a contract is advantageous for the option holder.

25.55 Options are largely exchange-traded in nature. This means that they are listed on an organized exchange, that they can be traded, and that they are subject to the typical conventions of exchange traded derivatives. They are standardized contracts, and the central clearinghouse requires margins on these contracts. That said, there are over-the-counter options as well. These exist in cases where an exchange traded option does not meet the

specific needs of the counterparties (buyer and seller). Over-the-counter options can be defined as customized options (e.g., strike prices and expiration dates are not standardized), with no secondary market, that arise from a private transaction between a buyer and a seller.

25.56 For example, in the case of a call option transaction on equity, the purchaser acquires from the seller the possibility (option) to purchase shares, at a fixed value, at some future point in time. If the stock price rises above the strike or exercise price, then the shares will likely be purchased at the strike price. The purchaser can claim an additional capital gain on the shares if he sells them, or he can hold them if expecting further stock market appreciation. However, if the option is not exercised then the seller benefits by retaining the premium. Buyers and sellers of such options may have different short and long-term expectations about the future value of the shares.

25.57 Warrants are a form of options. They are tradable instruments giving the holder the right but not the obligation to buy, under specified terms for a specified period, from the issuer of the warrant (usually a corporation) a fixed amount of an underlying asset, such as shares or bonds or exchange traded funds. Warrants are frequently attached to preferred shares (or bonds), allowing the issuer to pay lower dividends (interest rates). For example, detachable warrants are usually issued in conjunction with bonds (warrant-linked bonds) which allows the bond issuer to offer a lower coupon rate. Warrants on equity-linked instruments give investors the right to buy the underlying shares at a discount to the issue price. There are also currency warrants based on the amount of one currency required to buy another and cross-currency warrants tied to third currencies. Warrants can be traded apart from the underlying securities to which they are linked and therefore have a market value. The issuer of the warrant incurs a liability, which is the counterpart of the asset held by the purchaser. Although similar to other traded options, a distinguishing feature is that the exercise of the warrants can create new securities. This dilutes the capital of existing holders of shares or bonds, whereas traded options typically grant rights over assets that are already available.

25.58 Warrants also include covered warrants, which are issued without an accompanying security (bond or equity). A covered warrant gives the holder the right but not the obligation to buy, or sell, an underlying asset (either a financial asset, or a non-financial asset such as commodities) at an agreed upon price for a specified period of time or on a specified date.

Credit derivatives

25.59 The financial derivatives described in the previous paragraphs are related to market risk, which pertains to changes in the market prices of securities and commodities, interest rates, exchange rates, or other underlying items. Credit derivatives are financial derivatives whose primary purpose is to trade credit risk. They are designed for trading in loan and debt security default risk. Credit derivatives take the form of both forward-type and option-type contracts, and like other financial derivatives they are frequently drawn up under standard master legal agreements and involve collateral and margining procedures. There are three main types of credit derivatives: credit default swaps which are more of an option-type instrument because of the fixed payments/premiums; credit default options; and, total return swaps, which are forward-type of contracts.

25.60 A “credit default swap” is a type of option, though either party can be a creditor or debtor. In the case of a credit default swap, the purchaser pays a periodic fee to the seller in return for a cash reimbursement by the seller in the event of a default by the debtor of the underlying instrument. These periodic payments made by the protection purchaser to the protection seller constitute transactions in financial derivatives (see paragraph 25.73) that arise from the credit default swap spread, which can be established as the yield differential between bonds and/or loans of different quality and similar maturity. A credit default swap is considered a type of safeguard against non-payment resulting from a credit event, such as a change in a borrower’s capacity to meet payment obligations. The purchaser may be speculating that the debtor will default, while the seller takes an opposite position. In this way, this instrument transfers the credit exposure of fixed income instruments from one investor to another (counterparty) investor. The protection buyer benefits when there is a deterioration in the credit quality of the reference item and the spread of the swap increases; and the protection seller benefits when the credit quality of the reference item improves and the spread of the swap declines. In both cases, the value of the swap adjusts accordingly. The underlying assets of a credit default swap may be loans, debt securities or securitized debt (asset-backed securities). They tend to be more useful

in the context of longer-term debt securities, where the debtor's ability to repay is relatively more difficult to predict.

25.61 A "credit default option" is an option to buy protection or sell protection via a credit default swap.

25.62 A "total return swap" is a forward contract, which is generally thought of as a credit derivative, even though it encompasses both credit and market risk. It constitutes a derivative contract where one party pays sums based on a floating or fixed interest rate and receives payments from another party based on the return of a reference item (bond, share, index). The returns include any gains or losses in the reference item's price as well as any coupon or dividends over the period. The swap allows one party (the buyer) to gain exposure to an asset without owning it, in exchange for taking on the risk associated with the reference item (market risk and or credit risk depending on the underlying item). The other party (the seller) eliminates risk with the underlying item but takes on the credit risk to which the first party may be subject (that is, the risk of the counterparty of the swap).

Other derivatives, not elsewhere included

25.63 Other derivative contracts include those that do not involve exposure to the risks noted above. These can include inflation-indexed, volatility, dividend, property, freight, weather, or any other derivative contracts with non-standard underlying items, which are developed for a particular client. This category can also include derivative crypto assets, which are derivative contracts that rely on cryptography and that can be exchanged peer-to-peer even if the underlying asset is not a crypto asset).

3. Overview of accounting for derivatives

Valuation of stocks and flows

25.64 This section can be supplemented by material in other manuals. Users are referred to the FPFS, for detailed examples, and the *MFSMCG*.

Derivative positions

25.65 All financial derivative positions should be valued at current exchange prices, or market prices. This differs substantially from the notional value behind the derivative contract, which is the current value of the underlying item in a derivative contract at any point in time. As a result, the notional values are much larger than the corresponding exchange values of the derivative contracts. For exchange traded derivatives, the market prices can be readily observed. Over-the-counter derivatives should be valued using market-equivalent prices. This allows for a proper assessment of total market and/or credit risk on a timely basis. It is also necessary to calculate any new margin requirements, based on the holding gains or losses associated with the contracts.

25.66 A key characteristic of many derivative contracts is that the counterparties make commitments to transact, in the future and at agreed upon prices, in underlying items. Therefore, the value of a derivative contract corresponds to the difference between the agreed upon contract price of an underlying item and the prevailing market price (or market price expected to prevail), appropriately discounted, for that item. For a swap the value is derived as the difference, appropriately discounted, between expected gross receipts and payments. For all derivatives, especially for options and warrants, the prevailing market price is the current market price. In the absence of prevailing market prices, the cost of buying out the contract is used. The accumulation of transactions should not be used to estimate positions. However, source data typically provide information on the value of positions.

25.67 Financial derivatives are reported on the balance sheet, ideally on a gross basis as assets or liabilities – that is, as an asset in the case of a holding gain (potential cash inflow) or as a liability in the case of a holding loss (potential cash outflow). The value of a forward-type contract or a credit default swap can switch from an asset to a liability position (and vice-versa) between reporting dates resulting from movements in the market price of the underlying item. More specific references to the balance sheet account and revaluation account

follow in the discussion below.

Transactions and other flows

25.68 Financial derivatives transactions relate largely to those in options or to settlements for other types of derivatives. Transactions may take place between two parties directly, or through an intermediary. In the latter case, implicit or explicit service charges may be involved. In the former case, service charges may also be involved if one party is a financial corporation. Arranging a financial derivative may also involve a set-up fee which should be shown as an explicit fee charged by the financial corporation concerned and payable by the holder of the financial derivative. A financial corproation may act as a market maker and sell the products with a spread between the bid and offer price. This spread is treated as a service charge as with other financial instruments. The premium paid to the seller of an option may include a service charge. However, it is usually not possible to distinguish the implicit service element, and therefore the pemium paid is to be recorded as a financial transaction. Any observable commissions paid to brokers or other intermediaries for arranging options, futures, swaps, and other derivatives contracts are treated as payments for services in the sequence of accounts.

25.69 No investment income accrues on financial derivatives, and all payments are financial transactions (with holding gains and losses as required to reconcile opening and closing balance sheets). A premium may be charged at inception of contract (e.g., in the case of option-type contracts), but forward-type contracts generally have a value of zero at initiation.

25.70 Transactions in derivatives may arise in a series of instances:

a. at inception, where in the case of options the upfront premium is the acquisition of the derivative;

b. during the life of the contract, if there is a series of premiums (in the case of credit default swaps) or exchanges of cash flows (in the case of interest swaps);

c. on secondary markets, where existing contracts are bought and sold, such as with options;

d. with ongoing servicing in the form of servicing/settlement payments (see paragraphs 25.73 and 25.81); and

e. at settlement, where either a cash payment is made, or an underlying item is delivered.

25.71 The value of most derivative positions emerges largely from revaluations. The initial value of a forward-type financial derivative is typically zero (no transactions recorded), but it acquires a value as soon as there is a change in the circumstances that the financial derivative is designed to address. At this point, the coming into existence of a financial asset of one party and matching liability is recognized as a flow and recorded as a revaluation. Most of the subsequent changes in value are recorded in the revaluation account. For forward-type contracts, some fluctuations in value on the balance sheet can be the result of transactions in margins (see paragraph 25.78), which act to reduce the exposure of the derivative contract between both parties. For exchange traded contracts with active secondary markets, such as futures, transactions in financial derivatives are frequent and holding gains and losses can be significant.

25.72 In the case of option-type contracts, the full price of the premium should be recorded as acquisition of a financial asset by the buyer and as incurrence of a liability by the seller in the financial account, with corresponding positions in the balance sheet. The value of an option at inception should be recorded at the full price of the upfront premium. The same holds for the payment of an upfront premium for a credit default swap, if applicable (i.e, when the present value of the protection leg is greater than that of the payment leg). In the case of credit default swaps, the premium (excluding ongoing servicing payments) is sometimes paid after inception of the contract. These premiums should also be recorded astransactions in financial derivatives (see paragraph 25.73), but the premium should be recorded at the inception of the contract, being financed by accounts receivable/payable between the writer and the purchaser.

25.73 Subsequent purchases and sales of options and futures are also to be recorded in the financial account as transactions in financial derivatives. There can also be periodic cash settlement payments on forwards and swaps. Streams of net settlement payments under a swap or forward rate agreement contract (which might be described as interest in the contract) are not property income, while those paid on a credit default swap

(which might be described as premiums) are not fees. Rather, both are recorded as transactions in financial derivatives (see also paragraphs 12.131 to 12.137). If an option based on a financial asset is exercised at any point prior to expiration, the acquisition or sale of the underlying asset should be recorded at the prevailing market price in the appropriate instrument, with the difference between this amount and the amount actually paid recorded as transactions in financial derivatives. This can also occur before maturity for exchange traded contracts such as commodity futures or commodity options, giving rise to transactions in other accounts receivable/payable.

25.74 Revaluations of both exchange-traded and over-the-counter derivative positions are based on the holding gains and losses associated with the contract, and these changes can occur over the life of the contract prior to maturity. These fluctuations are reported in the revaluation account of the other changes in assets and liabilities account. For some contracts, holding gains and losses can be significant.

25.75 For financial derivatives positions are settled at maturity, These net settlements (excluding margin payments, discussed in paragraph 25.81) involve the extinguishing of the derivative contract as a financial transaction, along with corresponding transactions between the parties in other assets – typically cash, given that financial derivatives contracts are usually settled by net payments of cash. Cash settlement is a logical consequence of the use of financial derivatives to trade risk independently or ownership of an underlying item. However, some financial derivative contracts, particularly those involving foreign currency, are associated with transactions in the underlying item. Commodity-based contracts (e.g., commodity options) can also proceed to delivery and give rise to transactions in the underlying item. The delivery of the underlying commodity or asset should be recorded as a transaction in the relevant category at the prevailing market price, and the difference between the prevailing price and the price actually paid (times the quantity of the underlying item) should be recorded as a transaction in financial derivatives.

25.76 Two further activities worth noting in relation to financial derivatives are novation and portfolio compression. Novation is the replacement of an existing bilateral obligation with two new ones. For financial derivatives, this is where a bilateral contract between two parties is replaced by two bilateral contracts between each of the original parties and a clearinghouse. One advantage of novation is that the clearinghouse middleman assumes the counterparty risk. Novation can also take place without a clearinghouse, where one participant transfers a contract to another party. The total value of derivative contracts increases with a novation activity because there is an additional contract involving a third party. Transactions are also recorded at the time of the activity but, for the original parties, extinguishing of the first contract is offset by a new contract with the same value. For the third party, whether a clearinghouse or not, new transactions are recorded.

25.77 On the other hand, portfolio compression is the process of replacing a number of derivative contracts among participants with fewer new contracts. This, in turn, reduces the value of the overall investment, while maintaining the same risk and on a net basis. Net positions are also unchanged, although gross positions can be different. This process reduces both the total number of contracts in place and the aggregate notional values at risk. Portfolio compression can take place among two or more parties. Compression also results in transactions at the time of the activity by terminating the existing contracts and creating new contracts, sometimes with different counterparties.

The treatment of margins on derivatives

25.78 The provision of margin reflects market concern over counterparty risk and is a standard feature in financial derivative markets. The requirement of margin is a property of many derivative contracts (such as with futures, forwards, and often credit default swaps), and reflects the leveraged nature of most contracts alongside potential or actual obligations arising from the changes in value of the underlying item on which the derivative instrument is based over the duration of the contract. Margin balances are adjusted by cash deposits and/or pledging of cash collateral relating to potential or actual obligations or by cash payments (that cover many or most actual obligations) under financial derivatives, of which the latter are especially common for futures as well as cleared over-the-counter forward contracts. If the margin balance falls below the minimum or “maintenance” margin, the investor receives a “margin call” which is a call for providing additional funds. The funds transferred due to a margin call is referred to as the “variation margin” (sometimes also used to describe the margin call itself).

25.79 A key role of an exchange for financial derivatives is to organize trading so that default risk is minimized for exchange traded financial derivative contracts. To achieve this, the exchange operates a clearinghouse which acts as a counterparty for all such contracts. The clearinghouse requires that both members of the exchange deposit an amount per contract in an account upon entrance into the agreement. If the members of the exchange are acting on behalf of others, they will require a similar deposit from their clients. Depending on the jurisdiction, some, or most, over-the-counter financial derivatives require margin. In the case of cleared over-the-counter derivatives, a clearinghouse, operating with the banks/brokers that facilitated the contract, requires that both parties to the transaction deposit an amount upon entrance to the agreement. This requirement will also be passed on to their customers if the facilitators act on their behalf.

25.80 The initial margin placement may be made up of cash or interest-bearing securities. The margin placements are sometimes referred to as "repayable margin", given that the funds remain under the ownership of the depositor who retains the risk and rewards of the amounts placed. Margin placement transactions in cash are not the counterpart of transactions in derivatives; rather, they are the counterpart of transactions in claims on the exchange or at another institution corresponding to the resulting margin balances. Such claims are classified as deposits if they are the liabilities of a deposit-taking corporation. Otherwise, they are included in other accounts receivable/payable. When margin placements are made in pledged non-cash assets, such as securities, no entries are required because the unit on whom the depositor has a claim (the issuer of the security) is unchanged. In the case of a maintenance margin call (which can result from new contracts or holding losses on existing contracts), additional margin is required. These funds are not to settle a financial derivative contract and should thus not be recorded as transactions in financial derivatives.

25.81 However, as noted above, financial derivatives can also be subject to cash settlement payments. For centrally cleared over-the-counter and exchange traded derivative contracts, holding gains or losses associated with changes in the value of the derivative, over the life of the contract, are frequently applied to the margin account and give rise to recurring settlement payments. In organized exchanges, this is typically paid daily to meet the liabilities incurred from the daily (or intra-daily) marking of derivatives to market value. These settlement payments give rise to transactions in derivatives, reducing the financial liability created under a financial derivative contract loss. More specifically, the settlement payment is typically recorded as a transaction-based decline in the margin balance (i.e.., currency and deposits or other accounts receivable/payable) with a counterpart entry in the financial derivative liabilities; and the receipt of the funds is recorded as a transaction-based increase in the margin balance (i.e., currency and deposits or other accounts receivable/payable) with the counterparty entry in financial derivative assets. The counterparty entries constitute financial transactions in derivatives. For the party that has reduced or eliminated the financial derivative liability, it may be that any such cash settlement payment out of margin placement balances can also result in that party's need to replenish the maintenance margin to whatever degree would be required after the transaction.

4. Presentation and classification of derivative contracts

Presentation of derivatives in the SNA sequence of economic accounts

Basis of recording

25.82 Asset and liability positions and related flows in financial derivatives should be recorded separately on the balance sheets. Contracts (forward-type contracts and credit default swaps) that have registered accumulated holding gains (with a positive market value) are to be shown as an asset; and contracts that have registered accumulated holding losses (with a negative market value) should be shown as a liability.

25.83 However, it may not always be feasible to record asset and liability positions and related flows separately, because relevant source data are not available. This is particularly true for financial transactions. For example, in cases where several payments by both counterparties are made in a period when a derivative contract switches between an asset and liability position, gross recording may be impractical. In such cases, the alternative with net payments resulting in a decrease in liabilities for one party and a decrease in assets for the other party, thus consolidating a unit's assets and liabilities (often referred to as net reporting) is considered acceptable under certain circumstances. It should be noted, however, that this can give rise to asymmetries across sectors (depending on counterparties' reporting). The resulting balance, at any point in

time, is shown as an asset (if the balance is positive) or a liability (if the balance is negative). Similar considerations arise in respect of the reporting of holding gains and losses.

Classification of derivatives

25.84 Derivative contracts can be classified in various ways. One common classification is by instrument, with two broad groupings: forward-type contracts and option-type contracts, and any further details by sub-instrument. For example, forward-type contracts can include exchange traded futures and over-the-counter forwards and swaps. One complication with the instrument breakdown is that some sub-instruments are hybrid types and may not fit cleanly into one of the two broad groupings. Some other classifications can also be considered. A maturity breakdown by type of instrument is another example of sub-instrument detail. A lesser used related sub-classification is by delivery type. That is, whether at the end of a contract there is cash delivery (in most cases) or physical delivery of the underlying item (e.g., a commodity).

25.85 Another possible classification is by trading venue. This distinguishes between whether the instruments are exchange-traded or over-the-counter derivatives. Related to the trading venue classification is one based on clearing status. This would combine exchange traded contracts with cleared over-the-counter contracts in one category and non-cleared over-the-counter contracts in another category. Cleared over-the-counter derivatives are those for which a clearinghouse party is involved and therefore margin is required. This classification would require a sub-category of cleared versus non-cleared for over-the-counter derivatives.

25.86 A more relevant classification, than those discussed above, is by market risk category. This includes foreign currency, interest rate, equity, commodity, credit, and other derivatives. It is widely considered that such a breakdown provides more analytical value than the instrument classification. It also allows for a separate classification of credit default swaps. In practice, however, individual financial derivatives may straddle more than one risk category. For contracts that are simple combinations of exposures, it should be possible to identify and report in terms of the individual components. Those that cannot be broken down into separable risk components should be reported in one of the risk categories, determined by the underlying category that is the most significant. If there is doubt about the correct classification of multi-exposure derivative contracts, the allocation by risk component should be made according to the order of preference adopted by the BIS: commodities, equity, foreign currency, and single currency interest rate.

Classification details

25.87 The standard breakdown of financial derivatives in the integrated framework of national accounts is the one by type of market risk, as follows:

- foreign currency derivatives;
- single currency interest rate derivatives;
- equity derivatives;
- commodity derivatives;
- credit derivatives; and
- other derivatives.

Each category of derivatives is briefly discussed below.

25.88 Foreign currency derivatives involve the exchange of currencies in the forward market. They include all contracts involving exposure to more than one currency, whether in interest rates or exchange rates. They cover outright forwards, foreign currency swaps (including cross-currency interest rate swaps) and currency options.

25.89 Single currency interest rate derivatives are restricted to those contracts where all of the legs are exposed to only one currency's interest rate. These are contracts related to an interest-bearing financial instrument whose cash flows are determined by referencing interest rates (or by another interest rate contract). They include

forward rate contracts, single currency interest rate swaps, and interest rate options (including caps, floors, collars and corridors), but exclude contracts involving the exchange of currencies (e.g., cross-currency swaps and currency options) and other contracts whose predominant risk characteristics is risk related to foreign exchange rates.

25.90 Equity derivatives are contracts where the return, or a portion of the return, is linked to the price of a particular equity, or an index of equity prices.

25.91 Credit derivatives are contracts in which the payout is linked primarily to some measure of the creditworthiness of a particular reference asset. They specify an exchange of payments in which at least one of the two legs is determined by the performance of the reference asset. Payouts can be triggered by different events, including a default, a credit downgrade, or a stipulated change in the credit spread of the reference asset. Typical credit derivative instruments are credit default swaps, credit-spread forwards and options, credit event/default swaps, and total return swaps.

25.92 Other derivatives are any other derivative contracts which do not involve exposure to foreign currency, interest rate, equity, or credit risk. They include, for example, inflation-indexed derivatives, volatility derivatives, property derivatives, or freight derivatives.

25.93 It is also encouraged to compile, as supplementary items, other breakdowns of derivatives. This includes a breakdown by instrument (options; forwards and related instruments (other than futures and swaps); futures; swaps; credit derivatives; and other and hybrid derivatives); and a breakdown by trading venue and/or by clearing status (exchange traded derivatives; over-the-counter derivatives (cleared); and over-the-counter derivatives (not cleared)). It may also be considered useful to compile data on the currency composition of the notional values of the derivatives linked to foreign currencies.

D. Employee stock options

1. Introduction

Definition and terminology

25.94 As noted in chapter 12 on Financial account, an employee stock option (ESO) is an agreement made on a given date (the "grant" date) under which an employee may purchase a given number of shares of the employer's stock at a stated price (the "strike" price either at a stated time (the "vesting" date) or within a period of time (the "exercise" period) immediately following the vesting date. This part of the chapter will examine these issues in more detail.

25.95 While an ESO has certain characteristics of a standard option or warrant on corporate shares (they are regular call options), it is in fact a different instrument that is used for specific purposes. An ESO is unlisted and not tradable (cannot be sold) or exchangeable, as it is specific to an employee's compensation package. It is a particular form of income in kind, referred to as equity compensation, which reflects the practice of an employer giving an employee the option to buy stocks (shares) at some future date. The employee may choose to not exercise the option, for varied reasons; these might be the case either because the share price is lower than the price at which they can exercise the option, or because they are not an employee of that employer anymore and thus have forfeited the option in the process. If a stock option granted to employees can be traded on financial markets without restriction, it is classified as a financial derivative."

25.96 The employer's motive for an ESO is to provide staff with the incentive to help build the company's success and share in the economic benefits of that success. As an aside, there are other types of arrangements where employers can achieve similar results with their staff, such as through stock appreciation rights or employee stock purchase plans.

25.97 The terms of the ESO are spelled out to the employee in a formal agreement. Typically, an employer informs his employees of the decision to make a stock option available at a given price (the strike price or exercise price) after a certain time under certain conditions. These may include that the employee is still employed by the enterprise or may be conditional on the performance of the enterprise or employee.

25.98 The time of recording of an ESO in the integrated framework of national accounts must be carefully specified.

This includes the "grant date" which is when the option is provided to the employee; the "vesting date" which is the earliest date that the option can be exercised; and the "exercise date" or "exercise period" which is when the option is either exercised or lapses. In some countries the permissible length of time between vesting and exercise date is quite long; in others it is short.

Valuation

25.99 In the integrated framework of the SNA, if there is neither an observable market price nor a fair value estimate made by the corporation, the valuation of the options may be estimated using a stock options pricing model. These models aim to capture two effects in the value of the option. The first effect is a projection of the amount by which the market price of the shares in question will exceed the strike price at the vesting date. The second effect allows for the expectation that the price will rise further between the vesting date and exercise date.

ESOs as financial assets

25.100 Following vesting but before the option is exercised, the arrangement between the employer and employee has the nature of a financial derivative stock option for a period; however, it is shown in the financial accounts of both parties as "employee stock options". The employee has an asset, and the employer has a liability. Once exercised, the ESOs are exchanged for company shares, often at different and higher values which can entail a cash outlay by the employee. The advantage of an ESO is that if or when the stock rises above the call option exercise price, the employee can acquire the enterprise's shares at a discount. Once acquired, the employee can hold the shares in anticipation of further gains or dispose of it for a realized gain.

25.101 ESOs may also provide a benefit with respect to the recruitment and retention of staff, as well as offer certain taxation advantages. There are two further qualifications worth making: firstly, it is sometimes possible that the employer may buy back the options for cash instead of issuing shares; and secondly, it is also possible that multinational corporations may offer employees in one economy options on shares of their parent company in another country.

2. Accounting for ESOs

Current accounts

25.102 An estimate of the value of the ESO should be made on the grant date. This amount should be included as part of remuneration of employees spread over the period between the grant date and the vesting date, if possible. If this is not possible, the value of the option should be recorded at the vesting date.

25.103 The following adapts a simplified version of the example in the *FPFS*. It is assumed that the ESO has a strike price of 30 and a fair value of 20 and that there are 5 employees, with a total value of 100. It is further assumed that the ESO is spread over 2 consecutive periods, at 50 per period. This amount (50) would be included on the expenditures side of the corporation's generation of earned income account as remuneration of employees in each period. It would also be recorded in the households' allocation of earned income account as remuneration of employees in each period.

25.104 The costs of administering ESOs are borne by the employer and are treated as part of intermediate consumption just as any other administrative functions associated with remuneration of employees. Although the value of the stock option is treated as income, there is no investment income associated with ESOs in the earned income account.

Accumulation accounts and balance sheet

25.105 The value of the ESO in both periods (i.e., the vesting period and the exercise period) would be reflected in net lending/borrowing. In the financial account, the acquisition of an asset of 50 by households in each of the first and second periods is matched by a corresponding increase of the liability the employer. The amounts

recorded on the balance sheet are 50 at the end of the first period and 100 at the end of the second period, respectively.

25.106 When the ESO is exercised following the vesting date, the share price is assumed to be 50, in line with the fair value of 20 at the grant date and the strike price of 30. Households record purchases of shares, for a total amount of 250 (50 times 5 employees), in the financial account, with the source of funding being drawing down their own liquid funds by 150 (such as deposits) and extinguishing the ESO of 100 (this value would be the difference between the market price of the shares and the price paid by the buyer for the shares). Corporations record a corresponding issue of shares of 250 and an extinguishing of their ESO liability entry, as well as an increase of funds (such as deposits), in the financial account. In other words, exercising the ESO constitutes a set of financial transactions. This change is also reflected in the closing balance sheet account with households' holdings of shares now at 250 from the exercise of the ESO, and corporations' liabilities in the form of shares up by the same amount.

25.107 In principle, any change in value between the grant date and vesting date should be treated as part of remuneration of employees while any change in value between vesting date and exercise date is not treated as remuneration of employees but as a holding gain or loss. In practice, it is most unlikely that estimates of the costs of ESOs to the employers are revised between grant date and exercise date. For pragmatic reasons, therefore, the whole of any increase between grant date and exercise date is typically treated as a holding gain or loss. An increase in value of the share price above the expected price at grant time is a holding gain for the employee and a holding loss for the employer and vice versa. If an ESO is not exercised before the end of the exercise period (e.g., due to being allowed to expire, or due to change in employment), then the associated ESO of the holder and the corresponding liability of the corporation cease to exist, with the change being treated as other changes in the volume of assets and liabilities. Further, there are no adjustments to prior periods' ESO-related remuneration of employees.

3. Variations on employee stock options

25.108 There are other variations of actual or potential benefits related to shares in a corporation that have some similarities with ESOs. They relate to other means of encouraging and rewarding employees or the use of stock options to cover certain expenses. These variations are not ESOs, but they are briefly outlined here so as not to confuse them with ESOs.

25.109 "Employee stock appreciation rights" (SARs) are rights that allow employees to benefit from appreciating share prices should a corporation's share price rise over a specified time period. They are similar to ESOs in that they are issued with a grant date, an exercise price (which is typically the market price on the grant date), a vesting date, and an expiration date. However, unlike ESOs, employees are not required to pay the exercise price of the SARs. Instead, they receive the value of the market price of the share on the date of exercise in excess of the exercise price. SARs are generally settled in cash but may be settled in shares of an equivalent cash value.

25.110 Although SARs are not ESOs, they are recorded in a similar way in the national accounts and classified as ESOs. In practice, it may be difficult to obtain information on SARs on an accrual basis as their values may only be evident in the period in which they are exercised. In that case, SARs may not be recorded as ESOs, with the settlements recorded as renumeration of employees and corresponding entries in the financial accounts.

25.111 An "employee share purchase scheme" (or "stock ownership plan") is an offer extended to employees to purchase shares in their corporation at advantageous rates. Employees are not obliged to accept the offer. If the offer is accepted, the discount in the share value should be treated as remuneration of employees.

25.112 In an employee share plan (or stock ownership plan) a corporation may issue its own shares to the employees' pension fund. These should be recorded as renumeration of employees in the form of employers' actual contributions to social insurance schemes when issued, with a corresponding increase in the employee's pension assets.

25.113 It is possible that a corporation may pay for goods or services by means of stock options. When this happens, a derivative contract between the issuer of the options and the supplier of goods or services should be recorded

in the financial account, with the value of the stock options estimated by the value of the goods and services received in exchange.

E. Recording of flows associated with financial assets and liabilities

1. Introduction

25.114 Sectoral imbalances in the current and capital account result in changes to the stocks of financial instruments. These, in turn, give rise to net acquisitions of financial assets or net incurrence of liabilities in the financial account to build and adjust those stocks as required. This deficit or surplus of funds is largely intermediated through the financial corporations' subsectors, which meets the needs of investors and borrowers through their own stocks of financial assets and liabilities and investment activities, underlining the importance of the financial system to an economy. Chapter 12 on Financial account and chapter 14 on Balance sheet discuss the financial account and balance sheet, respectively, with an emphasis on financial assets and liabilities. Chapter 29 discusses financial corporations in more detail.

25.115 Holdings of financial instruments can give rise to various types of returns (e.g., interest and dividends), which are recorded as transactions in the earned income account. Transactions in financial instruments and holdings of financial instruments may also give rise to fees charged by financial corporations, some explicit and some implicit, which are included in their output measures.

25.116 Stocks of financial assets and liabilities also generate other flows – revaluations from holding gains and losses as well as volume changes, as discussed in chapter 13 on Other changes in assets and liabilities accounts. Revaluations of assets and liabilities tend to be a significant part of other flows, especially for marketable financial instruments as well as financial instruments denominated in foreign currencies.

25.117 All in all, non-financial and financial transactions, as well as other flows, determine the changes between opening and closing stocks on the balance sheets. The objective of this part of chapter 25 (as summarized in table 25.1) is to discuss, for each category of financial assets and liabilities, how and where changes in their values are recorded in the SNA sequence of economic accounts and to discuss when some part of the transaction relating to a financial instrument is treated as a measure of the output of financial corporations. Before describing these flows in detail in the next section, it is helpful first to recall the characteristics of financial corporations, the type of flows that are associated with providing financial services as well as the sort of income and holding gains and losses associated with holding financial assets and liabilities.

Table 25.1: Indications of the flows associated with different financial instruments

Financial instrument	Services appearing in the production account		Property income appearing in the earned income account					Revaluation account
	Buy/sell margin	Margin on interest	Interest and similar returns	Dividends	Withdrawals from income of quasi-corporations	Reinvested earnings on foreign direct investment	Investment income attributable to investment fund share holders	Holding gains and losses
Monetary gold and SDRs								
Gold bullion			x					x
Unallocated gold accounts			x					x
SDRs			x					x
Currency and deposits								
Currency								
Domestic								
Foreign								x
Crypto assets with a corresponding liability designed to act as a general medium of exchange			x					x
Transferable deposits								
In domestic currency		x	x					
In foreign currency		x	x					x
Other deposits								
In domestic currency		x	x					
In foreign currency		x	x					x
Debt securities	x		x					(x)
Loans								
In domestic currency		x	x					
In foreign currency		x	x					x
Equity and investment fund shares/units								
Equity								
Listed shares	x		x	x		x		x
Unlisted shares	x		x	x		x		x
Other equity and equity in international organizations	x			(x)	x	x		x
Investment fund shares/units								
Money market fund shares/units	x						x	x
Non-MMF investment fund shares/units	x						x	x
Financial derivatives and employee stock options								
Financial derivatives	x							x
Employee stock options								x
Other accounts receivable/payable			(x)					

The characteristics of financial corporations

25.118 Within the integrated framework of the SNA, the term "corporations" is used to describe institutional units providing both financial and non-financial services for the market. These are divided into two institutional sectors: financial corporations and non-financial corporations. Financial corporations are distinguished from non-financial corporations by providing financial services, including insurance and pension funding services. Some may issue deposits and facilitate means of payments between other units thus avoiding the need for barter. Some also provide the means whereby units seeking additional funds to finance capital formation, acquire financial assets or final consumption can utilize the funding set aside by other units as saving. More

generally, financial corporations are important for matching domestic non-financial investment with national saving and the external current account balance.

25.119 When considering the financial corporations' sector alone or in connection with other statistics such as monetary and financial statistics, it is usual to speak of financial institutions rather than financial corporations. No change in definition or coverage is implied by this change in terminology. When sub-sectoring the financial corporations' sector, as explained in chapter 5 on Institutional units and sector, economic territory and residence, a distinction is made between those financial corporations that are primarily involved in financial intermediation, which are called financial intermediaries, and other financial corporations.

25.120 Financial intermediation characterizes the activity of matching the needs of borrowers with the desires of lenders. It is carried out by financial corporations preparing alternative sets of conditions under which clients can borrow and lend. These conditions allow for variations in the rate of return that may be expected from an investment (lending) with, often, higher returns associated with increased risk and/or the longer-term investment of funds. There are now very many, very diverse ways in which money can be borrowed and lent. Financial intermediation draws on the different expectations of borrowers and lenders.

25.121 Financial intermediation for the market is typically carried out by financial corporations. However, some institutional units in the financial corporations' sector are not themselves intermediaries but simply provide services auxiliary to financial intermediation. For example, they may provide advice on borrowing and lending products suitable for their clients, such as a mortgage broker, or provide certain sorts of financial resources such as a foreign exchange bureau that exchanges one currency for another. These are the units described as financial auxiliaries. Some financial services may be carried out by unincorporated enterprises classified in the households' sector.

25.122 Financial corporations charge for the services they provide. The ways in which they charge for their services are not always obvious, or explicit. When a bank offers low-cost deposits, it only signifies that there are minimal explicit fees, not that there are no implicit fees. Further, interest rates on loans are typically higher than the costs of funding by banks. Fees may also be charged indirectly by means of charging those purchasing a financial asset more than the seller of the same asset receives. For example, dealers in foreign exchange typically buy and sell at different rates; the differences between those rates and the mid-point represent service charges paid by the customers.

25.123 It is not only the service charge that may have to be measured indirectly, but also in some cases the investment income. Bills and commercial paper are an offer of a fixed sum at some time in the future and the promise of this payment is sold at a discount. The increase in value accruing between the buying price and the redemption price is treated as interest in the SNA sequence of accounts.

25.124 The existence of implicit fees explains the difference between the terms used in financial markets and those used in the integrated framework of the SNA. For example, the money paid by a bank on a deposit is described as interest by the bank but is not the amount recorded as interest in the integrated framework of the SNA, because the amount paid by the bank is assumed to be a compound payment representing interest as understood in the integrated framework less the service charges levied on the depositor for the costs of operating the account. In the integrated framework of the SNA, the terms bank interest and SNA interest are used when it is necessary to distinguish the two concepts. Unless it is qualified as bank interest, the term interest in the integrated framework of the SNA is to be taken as referring to SNA interest.

Charging for financial services

25.125 As noted above, the way in which financial corporations charge for the services they provide is not always as evident as the way in which charges are made for most goods and services. Several kinds of financial corporations do make explicit fees for the services they render. Other financial corporations may make implicit charges, either alone or in conjunction with explicit fees. For a discussion of the treatment of implicit and explicit service charges, see paragraphs 7.166 to 7.227.

25.126 Explicit fees should always be recorded as payable by the unit to whom the services are rendered to the unit performing the service. If the services are rendered to a corporation or to government, the costs will form part of intermediate consumption. If they are rendered to households they will be treated as final consumption

unless the financial service is performed in relation to an unincorporated enterprise, including the owning and occupying of a dwelling. Within the integrated framework of the SNA, fees are not incorporated into the value of any financial asset even if their incurrence is necessary for the acquisition of the asset, nor do these fees affect the value at which transactions in financial assets take place in the market.

25.127 Implicit charges for financial services have to be measured indirectly. The charges may be simply the difference between the buying and mid-price and between the mid-price and selling price as in the example of foreign exchange quoted above. (Each service should be calculated at the time of the transaction concerned so that holding gains and losses occurring between the time of the purchase and sale are not treated as services.) Other implicit charges may be combined with other transactions (or other flows) on a particular financial instrument. The service charge associated with borrowing and lending is one such example where it is combined with interest. As noted in chapter 8 on Earned income accounts, when the output of financial services is discussed, ignoring the implicit charges for financial services may lead to understating the output of the industry and sector.

Investment income associated with financial instruments

25.128 Most financial instruments give rise to investment income. Debt instruments such as Special Drawing Rights (SDRs) on the IMF, loans, most debt securities, deposits, and some unallocated gold accounts where the amount is repaid according to a fixed formula give rise to interest (see paragraphs 8.119 to 8.131 for a more elaborated discussion of interest and similar returns). All fees payable to the owners of securities used for securities lending, to the owners of gold used for gold loans (whether associated with physical gold or allocated gold accounts) and to the owners of crypto assets without a corresponding liability designed to act as a medium of exchange used for crypto lending should be recorded by convention as interest. The interest may have a component of implicit financial services on loans and deposits, if the unit providing the loan is classified as a financial corporation. Equity and investment fund shares/units give rise to dividends, withdrawals from income of quasi-corporations, reinvested earnings on foreign direct investment, or investment income attributable to investment fund shareholders. The integrated framework of the SNA assumes that no interest is charged on accounts receivable/payable, except under certain conditions (see paragraph 25.195). In addition, gold bullion, currency, non-interest-bearing deposits, financial derivatives and employee stock options (ESOs) never give rise to investment income.

Holding gains and losses on financial instruments

25.129 Holding gains and losses are recorded in the revaluation account irrespective of whether the gains and losses are realized or not. Chapter 13 on Other changes in assets and liabilities account contains a detailed discussion of revaluations.

25.130 In the normal course of events, loans and deposits at nominal value and denominated in domestic currency do not give rise to holding gains though there will always be real holding losses for the asset holder (holding gains for the borrower) in the presence of inflation. Debt securities denominated in domestic currency may be subject to nominal holding gains and losses, as changes in the market interest rate leads to changes in the present value of future coupon payments and redemption values, which are reflected in the market price. Such recording is made irrespective of whether the gains and losses are realized or not. For equity and investment fund shares/units other than money market fund shares/units, nominal holding gains are common and may be substantial. Indeed, reaping potential holding gains is an important reason for investing in such instruments.

25.131 Financial instruments denominated in foreign currency(ies) are also subject to nominal holding gains and losses, as the relevant exchange rates fluctuate.

Other volume changes on financial instruments

25.132 Unlike non-financial assets, there are relatively few items recorded in the other changes in the volume of assets and liabilities accounts for financial instruments. Two common ones are worth noting here. Firstly, the

monetization and de-monetization of monetary gold reserves is entered as other volume changes, as the gold assets typically change from/to valuables (gold bullion). Secondly, loans that are deemed uncollectible, and that are not forgiven, are written-off and the values disappear from the balance sheet as other changes in volume. Chapter 13 contains a more detailed discussion of other changes in volume.

2. Recording flows in financial instruments

25.133 As explained above, both service charges and investment income flows may be combined with the costs of acquiring and disposing of financial assets and liabilities. This section of the chapter, therefore, examines each class of instrument in turn to identify what flows should be recorded in each case. Explicit fees are not covered in this section since even if they apply, their value is additional to the value at which financial assets change hands.

25.134 There are three types of flows of relevance in this section; the implicit fees made by financial corporations included in the production account (and the use of income account), different income flows included in the earned income accounts, and holding gains and losses included in the revaluation account. A summary of the types of flows that relate to each instrument is given in table 25.1. Implicit fees are subdivided between those that appear as a margin between the purchase and selling price and those that represent a margin on interest paid and received (i.e., financial intermediation services on deposits and loans). All income flows are investment income, and these flows are divided between interest, dividends, withdrawals from quasi-corporations, reinvested earnings on foreign direct investment and investment income attributed to investment fund shareholders. Only the instruments and investment income relating to insurance and pension schemes are excluded as the treatment of these schemes is described in chapter 24 on Insurance and pensions. Details on Islamic finance are provided in chapter 26.

Monetary gold

25.135 Monetary gold is gold to which the monetary authorities (or others who are subject to the effective control of the monetary authorities) have title and is held as a reserve asset. Monetary gold consists of two subcategories: physical gold bullion (including allocated gold accounts) and unallocated gold accounts with non-residents that give title to claim the delivery of gold, both of which are held by the monetary authorities (or other units authorized by them) as part of reserves. Although it may not be possible to publish these two subcategories separately for reasons of confidentiality, it is important to understand the different considerations that apply to each of them.

25.136 Gold bullion takes the form of coins, ingots, or bars with a purity of at least 995 parts per thousand. Gold held as a valuable by commercial banks or as inventories by some specialized industries (for example, jewelers), may be indistinguishable from gold bullion or may be of a lower quality. Physical gold, excluding gold bullion included in monetary gold, whether gold bullion or not, can be referred to as commodity gold (since it is traded on commodity markets).

25.137 Gold bullion may be sold by one monetary authority to another in another country. In such a case the exchange is recorded as an exchange of financial assets only. In all other cases, the gold is reclassified as commodity gold and thus a valuable held by the monetary authority (and is no longer part of reserves) and is then sold as commodity gold. The reclassification is recorded in the other changes in the volume of assets and liabilities account as demonetization of gold. If the gold is sold abroad it will feature in exports and imports of the countries concerned. When commodity gold is sold, there may be a trade margin attached to it. When a monetary authority seeks to increase its holdings of monetary gold through purchases of commodity gold, a reverse path is followed. The gold is acquired initially as commodity gold either from a domestic unit or from abroad and is subsequently reclassified to monetary gold as monetization in the other changes in the volume of assets and liabilities account.

25.138 There is no interest earned on gold bullion held as a valuable, but it is subject to nominal and real holding gains and losses as the gold price changes. However, a fee or interest can be earned when gold is lent out, such as in the case of gold swaps which are collateralized loans and earn interest. Monetary gold under such reverse transaction agreements should be excluded from reserve assets (see paragraph 12.46).

25.139 Unallocated gold accounts that are claims on non-residents and held by the monetary authorities are classified as monetary gold as part of reserve assets. Unlike gold bullion, unallocated gold accounts have counterpart liabilities. To be classified as monetary gold, the unallocated gold accounts must be held as part of reserve assets, and so the counterpart liability is necessarily on a non-resident. The counterpart liability will not be treated as part of monetary gold in the counterpart country. (Assets held abroad as part of reserve assets are generally not identified as such within the liabilities of the partner country.) If a monetary authority acquires an unallocated gold account to be treated as reserves from a non-resident non-monetary authority unit, it is recorded first as an acquisition of a foreign currency deposit and then reclassified to monetary gold as a change of classification in the other changes in the volume of assets and liabilities account. Removing an unallocated gold account from reserves is recorded as, first, a change in classification from monetary gold to a foreign currency deposit and then as a disposal of the deposit.

25.140 Unallocated gold accounts not held as reserve assets, and all unallocated gold account liabilities, are classified as deposits in foreign currency.

25.141 Unallocated gold accounts attract interest and a service charge and are also subject to nominal and real holding gains and losses as the gold price alters.

Special Drawing Rights (SDRs)

25.142 SDRs are international reserve assets created by the IMF and allocated to its members to supplement existing official reserves. SDRs are held only by the monetary authorities of IMF members and a limited number of international financial institutions that are authorized holders. SDR holdings represent unconditional rights to obtain foreign exchange or other reserve assets from other IMF members. Participants may hold more or fewer SDRs than their allocation as a result of transactions in SDRs between participants, or between participants and prescribed holders. Holdings of SDRs by an IMF member are recorded as a financial asset, while the allocation of SDRs is recorded as an incurrence of a liability of the member receiving them (see paragraphs 12.49 and 12.50). The IMF's SDR Department pays interest on SDR holdings to each member and levies interest charges on SDR allocations of each member at the same rate. Participants incur a small annual levy to cover the operational costs of the SDRs, which should be treated as explicit fees. Data on the interest rates payable are available regularly from the IMF. Since the value of the SDR is based on a basket of currencies, the value of SDRs is always subject to nominal and real holding gains and losses. Sometimes, new allocations of SDRs may be made; when this occurs, the allocation is recorded as a financial transaction.

Currency

25.143 Currency consists of notes and coins (including digital versions) that are of fixed nominal values and are issued or authorized by the central bank or government. Domestic currency is the simplest financial asset to record since no implicit service charges, investment income or nominal holding gains and losses are recorded. Under inflation, though, the holder of domestic currency suffers real holding losses. The cost of producing the physical notes and coins is recorded as output and collective final consumption of government or the central bank, depending on who produces and issues the currency. Central bank digital currency, which is analogous to central bank issued crypto assets with a corresponding liability designed to act as a medium of exchange, might be subject to explicit fees.

25.144 Foreign currency (the liabilities of non-resident units) should be recorded in the national balance sheets converted to a value in domestic currency using the exchange rate relevant for the date of the balance sheet. The value of foreign currency is subject to nominal and real holding gains and losses as the exchange rate of the foreign currency relative to the domestic currency fluctuates. As noted above, there is usually a service charge associated with acquiring or disposing of foreign currency.

Deposits and loans

25.145 Implicit financial services on loans and deposits concern the implicit service charges related to financial intermediation associated with loans and deposits held with financial intermediaries (excluding central

banks). Paragraphs 7.180 to 7.189 describe the basic principle of these implicit financial services and explain the need to make the distinction, referred to above, between interest as understood by the banks issuing deposits and holding loans and the investment income flows recorded in the integrated framework of the SNA. Preferably, a single reference rate should be applied to the level of loans and deposits denominated in domestic currency to determine the interest flows to be recorded in the sequence of economic accounts. The difference between these flows and bank interest are recorded as service charges payable to the banks by the units holding the deposits or loans. This applies to both resident and non-resident units and to deposits and loans held with resident and non-resident units. For deposits with banks, the service charge is equal to SNA interest less bank interest; for loans the service charge is equal to bank interest less SNA interest. At a minimum, it is probable that different reference rates should be used for every currency in which loans and deposits denominated in foreign currency. For reasons of feasibility, it is recommended to use, for the calculation of imports and exports of implicit financial services on loans and deposits, at least two groups of currencies (national and foreign currency).

25.146 No exclusion is made for lending of own funds. Although the act of lending own funds may not give rise to implicit productive activity, the integrated framework of the SNA considers that there is a service charge associated with the relevant lending. A person borrowing from a bank is unaware whether the amounts borrowed are of intermediated funds or come from the bank's own funds and no difference in the service charges applied on loans should be made. Similarly, if a person borrows from a money lender, there is a service charge payable, even though the loan is made from own funds.

25.147 It is not always easy to determine whether positions between banks should be classified as deposits or loans because the counterparties are unclear, or one party considers it as a loan and the other as a deposit. To ensure symmetry, all interbank positions other than securities and accounts receivable/payable are classified under deposits. It is assumed that the inter-bank rate at which banks borrow and lend to one another is usually such as to meet the criteria for a reference rate. (In some cases, it may be appropriate to use the inter-bank rate as the reference rate.) For this reason, it is typically assumed that there is no implicit financial services on loans and deposits associated with inter-bank lending and borrowing within the national economy. In some instances, such as for major financial hubs, it may often be appropriate to assume that there is also no such implicit financial services associated with inter-bank lending and borrowing with non-resident financial intermediaries. There are no implicit financial services produced by central banks on loans and deposits, although central banks may consume such services provided by international financial institutions.

25.148 The outstanding balance on a credit card or on an account with a retailer is often subject to interest. These outstanding balances should be classified as loans, not other accounts receivable/payable. Implicit financial services on loans and deposits are calculated on them if the unit providing the loan is classified as a financial intermediary.

25.149 Repurchase agreements (repos) are classified as giving rise to deposits or loans depending on whether they are or are not included in the national measure of broad money (see paragraphs 12.80 to 12.85 for a discussion of reverse transactions). They thus give rise to interest that may have an implicit financial services component. In addition, they may have explicit fees associated with their initiation.

25.150 There are no nominal holding gains and losses on deposits and loans expressed in domestic currency (whether these are held by residents or non-residents). With any inflation, there will be real holding losses on assets denominated in domestic currency. There may be nominal and real holding gains and losses on deposits and loans denominated in other currencies or held as unallocated gold accounts (or similar accounts in other precious metals).

25.151 Any charges made by a financial corporation for operating a bank account, a fee for cashing a cheque or for withdrawing money from an automatic teller machine are all treated as explicit fees.

25.152 The special case of non-performing loans and how they should be treated in the SNA sequence of economic account is discussed in chapter 14 on the Balance sheet.

Debt securities

25.153 Debt securities are negotiable financial instruments serving as evidence of debt, usually with active secondary

markets. The characteristics common to most include: an issue date and issue price, a redemption (or original maturity) date, a redemption price or face value, as well as, at any point in time a remaining maturity; a coupon (interest) rate that the issuer pays to the holder of debt securities (which may be fixed or variable), as well as coupon dates on which the issuer pays the coupon interest installment to the securities' holders.

25.154 Debt securities cover those with fixed interest rates or variable rates of return. There are a number of specific types of fixed interest rate debt securities, including stripped bonds (separate trading of interest and principal) and convertible bonds (into equity). Variable interest rate securities have their interest and/or principal payments linked to a reference item. These would be indexed debt for which either the coupon payments or the principal payments or both are linked to a price index (or inflation). These are discussed separately below (see paragraphs 25.169 to 25.183). Debt securities also include negotiable debt instruments, including utility tokens, that do not generate a rate of return.

25.155 In terms of recording the associated flows in fixed income debt securities, there are four broad types of debt securities. The first is where the amount payable at the end of the period for which the security exists is the same as the initial amount paid for the security but there are associated "coupons" that entitle the holder to payments of interest, at fixed rates, at intervals during the life of the instrument.

25.156 The second type of security is one where no intermediate payments are made but the issue price differs from the redemption price, such as where the security is issued at a discount (including deep-discounted bonds and zero-coupon debt securities). The issue price is equal to the redemption price discounted to the date of issue at the appropriate rate of interest that could be earned on a deposit of similar characteristics. The increase in value of the security during its life is treated as interest accruing to the holder of the security that is "reinvested" in the security to increase its value.

25.157 The third type of security is a hybrid of the two other forms noted above; the initial value is less than the redemption value but there are also attached coupons. In certain circumstances, if the coupons represent a rate of interest higher than that prevailing in the market for similar securities at time of issue, the security may be offered at a price higher than the redemption price (but only the face value will be redeemed at maturity).

25.158 The fourth type is perpetual debt where only coupon payments to perpetuity are present. It is a debt security with no maturity date, and the issuer does not have to redeem the principal amount.

Service charges associated with securities

25.159 For securities, the interest calculated according to the coupon or as the increase in value of the security is recorded in the SNA sequence of economic accounts as such without adjustment for a service charge. However, there is normally a service charge associated with the acquisition of a security on initiation and with the disposal and acquisition of a security at any point during its life. These service charges are identified as being the difference between the buying (bid) and selling (ask or offer) price quoted for each security and the mid-price. The bid and offer prices should be those applicable to the individual buyer and seller since these may vary according to the quantity being transacted or other factors. Suppose an instrument is bought for 102 and subsequently sold for 118 on the secondary market (both values including accrued interest) even though there has been no change in the rate of interest (and hence of the value of the instrument due to holding gains and losses). At first sight, it seems that interest of 16 should be recorded. However, assuming that the mid-price on purchase was 100 and on sale was 120, the correct recording would be to show interest of 20 payable by the issuer of the security to the holder with a purchase of services of 4 payable by the holder to the dealer in securities. Ignoring the bid-ask spread understates interest and ignores the brokerage services provided by the financial corporations that buy and sell securities.

Accrued interest

Interest on discounted securities

25.160 There are two ways in which the value of a discounted security can be determined during its life when the prevailing interest rate is different from the rate prevailing when the security was issued. The debtor approach

is the perspective of the unit issuing the security and the creditor approach is the perspective of the unit holding the security. The first option, called the debtor approach, is to continue to use the rate prevailing on initiation throughout the instrument's life. The alternative, the creditor approach, is to use the current rate to estimate the value of interest between any two points in the instrument's life.

25.161 Suppose a debt security is offered at 90 with a redemption value of 100 (i.e., zero-coupon instrument). If the discount (interest) rate does not change during its life, interest will accrue steadily throughout. Suppose, though, that the interest rate falls when the instrument has reached a value of 95. Because the redemption value is now discounted by a smaller factor, the value of the security increases, say to 97. Both the creditor and debtor approach would record interest of 5 in the period before the interest rate decline. Under the creditor approach, this increase in value of 2 from 95 to 97 is treated as a holding gain and only the subsequent rise to the redemption value of 100 is treated as interest. Thus, over the whole life of the instrument it has given rise to interest of 8 and a holding gain of 2 for the creditor (and a holding loss for the debtor).

25.162 In the SNA sequence of economic accounts, the debtor approach is used for interest. Under this approach, the interest accruing in the period before the interest rise is still 5 but so is the interest in the period after the interest rate rise. Adding this level of interest to the value of 97, which includes the holding gain of 2, when the rise occurred would give a value of 102 at the redemption date. Since this value is too high, a holding loss of 2 must be recorded for the creditor (and a holding gain for the debtor). Thus, over the whole life of the instrument there is interest of 10 with an initial holding gain of 2 (when the interest rate changed) offset by the later holding loss of 2. The holding loss occurs steadily between when the holding gain was recorded and the redemption period. The rationale for using the debtor approach is that the debtor, the issuer of the security, is not liable to make the payment until the security matures and from his perspective it is appropriate to treat the total amount of interest as accruing steadily over the life of the security.

Interest on bills, commercial paper and similar instruments

25.163 Bills and other short-term paper are short-term securities that give the holder (creditor) the unconditional right to receive a stated fixed sum on a specified date. They are issued and traded in organized markets at a discount that depends on current market short-term interest rates and the time to maturity. Most bills mature after a period ranging from one month to one year.

25.164 As the instrument approaches maturity, its market value increases because there is less discounting applied to it. This increase in value, in common with the increase in the value of any asset due to the unwinding of a discount factor, is treated as income in the integrated framework of the SNA. For financial assets, the income is recorded as interest.

25.165 Let the price paid for a bill at its time of issue and after excluding the service charge be L; this represents the amount of funds that the purchaser (creditor) provides to the issuer (debtor) and measures the value of the initial liability incurred by the issuer. Let the face value of the bill be F: this represents the sum paid to the holder of the bill (the creditor) when it matures. The difference, F-L, or discount on the bill, measures the interest payable over the life of the bill.

25.166 Bills and other short-term paper are traded on money markets at values that gradually rise to reflect the interest accruing on the bills as they approach maturity. The increase in the value of a bill due to the accumulation of accrued interest does not constitute a holding gain because it is due to an increase in the principal outstanding and not to a change in the price of the asset.

Interest on bonds and debentures

25.167 The nominal value of a debt security accrues interest in accordance with the debtor approach. Bonds and debentures are long-term securities that give the holder the unconditional right to:

a. A fixed or contractually determined variable money income in the form of coupon payments; or

b. A stated fixed sum on a specified date or dates when the security is redeemed; or

c. Both (a) and (b). Most bonds fall into this category.

25.168 When a bond is issued at a discount, the difference between the face value, or redemption price, and the issue price constitutes interest that accrues over the life of the bond, in the same way as for a bill. However, as accounts are compiled for time periods that are typically much shorter than the life of the bond, the interest must be distributed over those periods. The way in which this may be done is explained below.

Zero-coupon bonds

25.169 Zero-coupon bonds are long-term securities that are similar to bills. They can be issued as single payment debt securities with no coupon payments, sold at a discount from face value. They can also be created from fixed rate debt securities by stripping them of the coupons (i.e., stripped bonds, often created by securities dealers but sometimes by the issuer) thus separating them from the final principal payment of the security and trading the coupons independently. Zero-coupon bonds do not entitle their holders to any fixed or variable money income but only to receive a stated fixed sum as repayment of principal and accrued interest on a specified date or dates. When they are issued, they are usually sold at a price that is substantially lower than the price at which they are redeemed on maturity. Let L equal the issue price and F the redemption price, so F-L is the value of the interest receivable and payable over the life of the bond. This interest has to be distributed over the years to its maturity. One possible method is to assume that interest at a rate of r is credited at the end of each year at an annual rate that is constant over the life of the bond, so that the final value $F = L(1 + r)^n$.

25.170 The interest rate, r, is given by the following expression $r = (F/L)^{1/n}-1$ where n is the number of years from the time of issue to maturity. The interest accruing during the course of year t is then given by $rL(1+r)^{t-1}$ where t = 1 at the end of the first year.

25.171 The interest accruing each year is effectively reinvested in the bond by its holder. Thus, counterpart entries equal to the value of the accrued interest must be recorded in the financial account as the acquisition of more bond by the holder (creditor) and as a further issue of more bond by the issuer (debtor).

Other bonds, including deep-discounted bonds

25.172 Most bonds pay a fixed or variable money income and may also be issued at a discount or, possibly, a premium. In such cases, the interest receivable by the holders of the bonds has two components:

a. The amount of the money income receivable from coupon payments each period; plus

b. The amount of interest accruing each period is attributable to the difference between the redemption price and the issue price.

25.173 The interest rate should be the one at which the present value of future interest and principal payments equals the issue price of the bond. However, the accrued interest can be approximated by separating the two components, so that the second component is calculated in the same way as for zero-coupon bonds, as described above. In the case of deep-discounted bonds, most of the interest accruing is attributable to the difference between the redemption price and the issue price. At the other extreme, some bonds offer an income stream in perpetuity and are never redeemed.

Index-linked securities

25.174 Another type of debt securities covers variable interest rate securities. Index-linked securities are financial instruments for which the amounts of the coupon payments (interest) or the principal outstanding or both are linked to a general price index, a specific price index, the price of a commodity, an interest rate, or an exchange rate index. Different treatments are recommended for the recording of transactions depending on the type of index used to uprate the level of principal to which the interest is linked and on the currency in which the interest and principal are denominated.

25.175 The indexation mechanism links the amount to be paid at maturity or coupon payments or both to indicators agreed by the parties. The values of the indicators are not known in advance. For debt securities with indexation of the amount to be paid at maturity, they may be known only at the time of redemption. As a

result, interest flows before redemption cannot be determined with certainty. For estimating interest accruals before the values of the reference indicators are known, some proxy measures have to be used. In this regard, it is useful to distinguish the following three arrangements:

a. indexation of coupon payments only with no indexation of amount to be paid at maturity,

b. indexation of the amount to be paid at maturity with no indexation of coupon payments, and

c. indexation of both the amount to be paid at maturity and coupon payments.

25.176 The principles described below for index-linked debt securities apply to all index-linked debt instruments.

25.177 When only coupon payments are index-linked, the full amount resulting from indexation is treated as interest accruing during the period covered by the coupon. It is most likely that by the time data are compiled for a reporting period, the date for the coupon payment would have been passed and hence the value of the index is known. When the date for the coupon payment has not been passed, the movement in the index during that part of the reporting period covered by the coupon can be used to calculate the interest accrual.

25.178 When the amount to be paid at maturity is index-linked, the calculation of interest accruals becomes uncertain because the redemption value is unknown; in some cases, the maturity time may be several years in the future. Two approaches can be followed to determine the interest accrual in each accounting period.

a. Interest accruing in an accounting period due to the indexation of the amount to be paid at maturity may be calculated as the change in the value of this amount outstanding between the end and beginning of the accounting period due to the movement in the relevant index.

b. Interest accruals may be determined by fixing the rate of accrual at the time of issue. Accordingly, interest is the difference between the issue price and the market expectation, at inception, of all payments that the debtor will have to make; this amount is recorded as interest accruing over the life of the instrument. This approach records as income the yield-to-maturity at issuance, which incorporates the results of the indexation that are foreseen at the moment the instrument was created. Any deviation of the underlying index from the originally expected path leads to holding gains or losses which will not normally cancel out over the life of the instrument.

25.179 While the first approach (using the movement in the index) has the advantage of simplicity, interest includes all changes and fluctuations in the value of the amount to be paid at maturity in each accounting period due to the movement in the relevant index. If there is a large fluctuation in the index, this approach may yield negative interest in some periods even though market interest rates at the time of issue and current period may be positive. Also, fluctuations behave like holding gains and losses. The second approach (fixing the rate at the time of issue) avoids such problems, but the actual future cash flows may differ from the initially expected cash flows unless ex ante market expectations are exactly met. This means that interest for the life of the instrument may not be equal to the difference between the issue price and redemption value.

25.180 The first approach works well when a broad-based indexation of the amount to be paid at maturity is used (for example a consumer price index) as such indexation is expected to change relatively smoothly over time. However, the first approach may give counter-intuitive results when the indexation of the amount to be paid at maturity combines motives for both interest income and holding gains (for example, a commodity price, stock prices, or gold prices). Therefore, when indexation includes a holding gain motive, typically indexation based on a single, narrowly defined item, the second approach is preferred, otherwise the first approach should be used for the measurement of interest accrual.

25.181 When both the amount to be paid at maturity and coupon payments are indexed to a broad-based reference item, interest accruals during an accounting period can be calculated by summing two elements: the amount resulting from the indexation of the coupon payment (as described in paragraph 25.177), that is attributable to the accounting period, and the change in the value of the amount outstanding between the end and beginning of the accounting period due to the movement in the relevant index (as described in paragraph 25.178 (a)). When both the amount to be paid at maturity and coupon payments are indexed to a narrow index that includes a holding gain motive, interest accruals for any accounting period can be determined by fixing the yield-to-maturity at issuance (as described in 25.177 (b).

25.182 Debt instruments with both the amount to be paid at maturity and coupon payments indexed to foreign currency are treated as though they are denominated in that foreign currency; interest, other economic flows

and stock levels for these instruments should be calculated using the same principles that apply to foreign currency denominated instruments. Interest should accrue throughout the period using the foreign currency as the currency of denomination and converted into the domestic currency using mid-point market exchange rates. Similarly, the amount outstanding should be valued using the foreign currency as the unit of account with the end of period exchange rate used to determine the domestic currency value of the entire debt instrument (including any accrued interest) in the international investment position. Changes in the market value of debt securities due to exchange rate movements or interest rate changes are treated as revaluations.

25.183 As with other securities, the interest accruing as a result of indexation is effectively reinvested in the security and these additions to the value of the security must be recorded in the financial accounts of the holder and issuer.

Equity and investment fund shares/units

25.184 The financial service charges levied on transactions in equity and investment fund shares/units are calculated in the same away as for debt securities as the difference between the financial intermediary's selling price and the mid-price and between the mid-price and the intermediary's buying price (see paragraphs 7.190 to 7.194). They are treated as implicit fees.

25.185 The investment income from corporate equity takes the form of distributed income of corporations. For corporations, the distributed income is in the form of dividends. For quasi-corporations, the investment income is withdrawals from income of quasi-corporations. As noted in chapter 8 on Earned income accounts, dividends or other withdrawals from corporate income are recorded as investment income at the time the shares start to be quoted ex dividend. A different recording is made for extraordinarily large dividends (super dividends) that are out of line with recent experience regarding the amount of income available for distribution to the owners of the corporation (see paragraphs 8.137 to 8.139, 12.99 to 12.102 and 30.135 to 30.137). Any excess distribution is to be recorded as a withdrawal of equity (recorded in the financial account) and not as part of investment income.

25.186 However, for foreign direct investment companies, all dividends payable are treated as earned income, including dividends sourced from accumulated reserves, unless they relate to the sales of financial or non-financial assets (other than cash). The resulting difference in treatment on super dividends between domestically-controlled corporations and foreign direct investment enterprises, is considered an acceptable inconsistency that is in line with the different treatment of retained earnings of foreign direct investment enterprises, for which retained profits, equal to the direct investor's proportion (in terms of equity held) of distributable income, less amounts declared for dividend distribution to the foreign direct investor, or less the withdrawals from income of the quasi-corporation by the foreign direct investor, are treated as being distributed in the form of reinvested earnings on foreign direct investment and reinvested in the relevant company (see paragraphs 8.143 to 8.146 and 12.100).

25.187 For investment funds, the income element comes in the form of investment income attributable to the investment fund shareholders. In the SNA sequence of economic accounts, these include dividends distributed to shareholders, imputed dividends corresponding to indirect charges to shareholders and retained earnings attributed to shareholders. Therefore, the full value of the investment income earned is shown as being distributed to the shareholder in the allocation of earned income account with reinvestment of the retained earnings portion recorded in the financial account. The investment income payable to the investment fund shareholders is recorded without any deduction of costs incurred by the fund in its day-to-day operations. These financial services, including those paid by the investment fund on behalf of shareholders, are recorded as being provided directly by the original services providers to the shareholders. This may also include implicit financial services on loans and deposits.

25.188 As noted earlier, there may be considerable holding gains and losses, both nominal and real, on equity and investment fund shares/units.

25.189 The entries in the financial accounts relating to acquisitions of equity conceptually contain two distinct types of transactions. One is the exchange of equity and investment fund shares/units between institutional units. Because the transactions are valued at mid-price, total acquisitions must be equal to total disposals. The net effect, therefore, is to show the change in composition of the holders of shares/units by institutional sector

and with the rest of the world. The second type of transaction included in the financial account is the receipt of any reinvestment of earnings and the counterpart of the outflow recorded under investment income payable by corporations. In calculating the revaluation element between opening and closing balance sheet, care must be taken to exclude the reinvestment of earnings term.

Financial derivatives

25.190 Issues relating to financial derivatives are discussed in section C of this chapter.

Employee stock options

25.191 Issues relating to employee stock options are discussed in section D of this chapter.

Other accounts receivable/payable

25.192 This category comprises trade credit and advances; emission permits and other accounts receivable/payable n.e.c.

25.193 Trade credit refers to the case where goods and services have been delivered but payment has not yet been received. Advances refer to payment for work-in-progress for which prepayment has been made but the products are not yet delivered. The means of financing payment, such as the use of credit cards, is not included here; the balance on the cards is treated as a loan and payments such as interest or overdue fees are recorded as is the case for loans. Trade credit and advances are further dicussed in paragraph 12.144.

25.194 Emission permits are described in paragraph 12.146 and other accounts receivable/payable n.e.c. are described in paragraphs 12.147.

25.195 In the normal course of events, there is no interest charged on other accounts receivable/payable. However, when the time gap becomes unusually long and the amount of credit extended is very large, the conclusion may be that implicitly an interest fee has been charged. In such extreme cases, the actual payment or payments should be adjusted for accrued interest in order to arrive at the correct value of the item transferred. Interest may also accrue in periods of high interest and/or inflation. Such adjustments are not recommended for normal trade credit.

25.196 Other accounts receivable/payable denominated in domestic currency can have no nominal holding gains and losses but may have real ones. Any items denominated in foreign currency may have both nominal and real holding gains and losses.

Chapter 26: Islamic Finance

This is a common chapter with chapter 17 of *BPM7*, and for the most part, the text is identical in both the *2025 SNA* and *BPM7*.

A. General overview

1. Background

26.1 Islamic finance is distinguishable from traditional finance in several ways, in relation to both financing and insurance activities. Islamic financial institutions, as well as financial institutions with Islamic windows that offer both conventional finance and Islamic finance, are bound by Shari'ah principles. The principles and rules of Shari'ah (or Islamic law) include prohibitions on *Riba* (usually translated as interest), *Gharar* or uncertainty (sometimes translated as "excessive uncertainty"), *Maysir* (gambling) as well as short sales or financing activities that are considered harmful to society. Islamic insurance follows these same principles and is further based on the notion of mutual assistance.

26.2 As a result, in economies in which Islamic finance is prevalent, financial corporations have developed specific forms of financing arrangements that are consistent with these principles. In addition, Islamic financial standard setting bodies, including the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) and the Islamic Financial Services Board (IFSB), have developed standards on accounting, auditing, and related regulatory standards and frameworks, to promote greater harmonization of Islamic finance reporting practices across countries.

26.3 The historical development of the system of national accounts, external sector statistics, and other macroeconomic statistics have largely reflected the predominance of conventional financial structures and terminology. Given the rapid growth of Islamic finance in recent years, as suggested by studies and the Islamic Finance Development Indicator (IFDI), it is significant enough to affect the quality of different areas of macroeconomic statistics in several countries. This situation can affect the international comparability of these statistics. To address these issues, this chapter provides guidance on the statistical treatment of Islamic finance focusing on the national accounts. More general guidance on financial corporations is provided in chapter 29 on Financial corporations.

2. Outline of the chapter

26.4 This chapter presents guidance to properly account for Islamic finance and insurance arrangements in the integrated framework of national accounts. In doing so, it elucidates, by instrument, the special types of financing arrangements (sales-based contracts, lease-based contracts, equity-based contracts, or profit/loss sharing) that characterize Islamic finance. It reviews distinct operations of Islamic finance and insurance and addresses issues such as the nature of income on certain Islamic financial instruments (to be included in deposits, loans, debt securities, etc.), the sector classification of Islamic financial institutions, the measurement of output, including the measurement of implicit financial services on loans and deposits, the treatment of Islamic insurance-like business as well as the instrument classification of select Islamic financial arrangements. This chapter also briefly clarifies the concept of economic ownership in the case of Islamic Finance. The structure of the chapter is as follows: section B reviews Islamic financial institutions and their sectoring; sections C and D provide guidance on the measurement of output and income, respectively; section E presents Islamic financial arrangements, and how these are reflected in macroeconomic financial instruments; and section F covers issues related to economic ownership.

B. Islamic financial institutions and sectoring

1. Some basic features of Islamic finance

26.5 Important differences exist between conventional and Islamic finance. Islamic finance must follow certain "Shari'ah" standards, hence it is often called "Shari'ah-compliant". The general principles of Islamic finance are: the prohibition of collection and payment of interest or other predetermined returns on investments; the encouragement of investment in real economic activities or trading in goods and services for profit; sharing rewards and risks between parties involved; the avoidance of profiting from trading in financial assets or "using money to make money"; the discouragement of excessive uncertainty, which may prohibit the use of many types of financial derivatives; and the prohibition of financing certain activities that are forbidden by Islam, such as alcohol or drugs. In addition to commercially driven activity, Islamic principles also emphasize the importance of charitable giving, whether through the mandatory charity due (or *Zakah*) or voluntary charity (*Sadaqah*). Both forms of giving can (but do not have to) be implemented through a type of endowment trust known as a *Waqf*.

26.6 To adhere to these principles and to simultaneously accommodate the financing of economic activity, Islamic financial corporations have developed various financing arrangements that are mapped to more generic financial instruments. These financing arrangements are often based on trading models or profit and loss sharing models involving underlying non-financial assets. The recording of such non-financial assets may be reflected on the balance sheet of the Islamic financial institution or a unit which it owns when the (legal) ownership is acquired but not the economic ownership as applied in the integrated framework of national accounts. Economic ownership of non-financial assets, including changes in economic ownership, are discussed in section F; they are closely related to the characteristics of the financing instruments discussed in section E.

26.7 In addition, Shari'ah-compliant activities should be segregated from non-compliant activities and funds (i.e., not following Shari'ah principles). This gives rise to some specific treatments. Firstly, the financial statements of Islamic windows of conventional financial institutions should be separated from their regular financial activities. Further, off-balance sheet restricted investment accounts of these banks and other deposit-taking corporations which comply with Islamic finance accounting standards are to be classified as separate institutional units.

26.8 Secondly, there is a distinctive arrangement in which a charitable institution contracts with a fund manager the establishment of a dedicated open-ended asset *Waqf Fund,* managed according to Shari'ah principles, to which the public can make donations by "purchasing" units of the fund. The charitable institution is the beneficiary of the fund – that is, it is the economic owner of all the units of the fund. Under the agreement, the fund will reinvest or distribute specified amounts of the profits to the beneficiary, and it will charge fund management fees. The donor's investment in the fund constitutes an irrevocable donation to the beneficiary and the function of the fund is to provide financial management of the beneficiary's portfolio of assets. These types of funds are also required to keep a complete set of accounts and constitute institutional units.

26.9 Thirdly, there are various schemes in different countries for supporting or enabling pilgrims to save for, or to undertake, the Islamic pilgrimage (or *Hajj*). The term *Hajj Fund* is used to describe the case of a market enterprise that undertakes, as a significant part of its activities, the management of long-term savings open to individuals intending to undertake the Hajj pilgrimage in compliance with Shari'ah principles. Such funds are considered as institutional units, if they are legally established entities with an autonomous management and if they keep a complete set of accounts; as such, they are classified separately within the financial corporations' sector. For Hajj savings to meet the conditions of deposits, it is likely that the fund would be a regulated deposit-taking corporation (such as a bank or similar unit) with the principal value of the deposit typically protected to some degree. This may not be the most common scenario in many countries, where they are usually treated as non-money market investment funds. Although a *Hajj Fund* might undertake certain secondary non-financial activities, such as the provision of travel, accommodation and related services to pilgrims planning for the Hajj, these activities are expected to be far less significant than its financial activities. Such non-financial activities would normally involve a institutional unit separate of the fund.

2. Islamic banking and other financial activity, including sectoring

26.10 The following guidance focusses on the subsector classification of Shari'ah-compliant financial institutions within the financial corporations' sector. These subsectors typically also include conventional financial institutions as described in chapter 29 on Financial corporations. The central bank and pension funds are not explicitly discussed below, as these are not specific to Islamic finance with the possible exception of some of their investments (discussed in section E). If a pension fund only invests in assets that comply with Islamic principles, it could be considered Shari'ah-compliant and as such remains classified within the pension funds' sub-sector.

Deposit-taking corporations except the central bank

Organizational considerations

26.11 The subsector of deposit-taking corporations except the central bank is dominated by banks and can include both Islamic banks and other deposit-taking corporations, as well as conventional banks and other deposit-taking corporations with Islamic windows. *Islamic banks and other deposit-taking corporations* manage funds received to produce returns through investments or financing of transactions for customers. Such operations are sometimes described as *Mudarabah* transactions, the customer is a capital provider, and the financial institution is the entrepreneur (*Mudarib*) that invests the capital. The main inflows include *unrestricted funds* (discussed in section E) that are comingled with other bank funds, in the same way as deposits in conventional banks. However, the *unrestricted funds* are invested in Islamic financial instruments.

26.12 On the other hand, *restricted funds* are managed separately by the bank and segregated from other funds received and typically treated off-balance sheet; as such, they are also excluded from this subsector. The contracts under which these accounts are created do not give the bank authority over decisions regarding the use and distribution of the funds it receives from account holders. Rather, the bank can only make decisions on the administration and management of the accounts. The only link between the bank's accounts and the off-balance sheet restricted investment accounts is the share of investment income from these investment accounts (as *Mudarib)*, which is recorded as a single item in the bank's income statement. Restricted funds, while part of the Islamic banks' business, are almost always treated as a separate institutional unit and classified as investment funds.

26.13 *Islamic windows of conventional banks and other deposit-taking corporations* that accept deposits are also confined to invest the deposits in Islamic financial instruments only. The funds provided under such contracts have the characteristics of deposits, and they provide financing to borrowers using various Islamic financial instruments. Conventional banks are required to maintain a full set of accounts, including a balance sheet, for their *Islamic windows*. They are also obliged to have a Shari'ah Supervisory board, and may have an independent management separate from that of the conventional banks that run them. The reason for this is that the management of the windows requires the existence of a Shari'ah Council as part of its mission to ensure that the funds are not mixed with the funds of the conventional banks. Accordingly, these *Islamic windows* are considered as institutional units independent of the conventional banks, albeit still classified as part of the deposit-taking corporations' subsector.

Basics relating to sources and uses of funds

26.14 Unlike conventional banking, there is no common interest rate (nor interest rate ladder) applicable to Islamic deposits that determines the depositors' returns. Islamic banks and Islamic windows of conventional banks offer Islamic deposit accounts that are quite similar to conventional accounts, but the banks are also heavily funded by accounts in which the returns/losses are shared between the bank and the depositor/investor. Under a profit-sharing model (i.e., participation account), an Islamic bank can withhold part of the depositors' net profits as a profit equalization reserve. Under the rules of accrual accounting in the integrated framework of the SNA, these profits should be treated as distributed and subsequently reinvested into the reserve. The depositors in these arrangements therefore acquire a component of the bank's equity or a different type of bank liability.

26.15 Diverse financial instruments, as discussed in section E, can be thought of as sources and uses of the funds provided. Sources of funds are used to generate revenues in different ways – financing of sales, leasing, fees, equity participation, or investment. Some instruments do not have conventional bank equivalents. The returns to Islamic banks and Islamic windows of conventional banks on their financing and investments are not guaranteed, but rather depend on the success or failure of their ventures. Returns (and sometimes losses) are divided between the bank and the depositors based on the specific types of Islamic financial instruments used.

Investment funds

26.16 Islamic investment funds are collective investment schemes that issue shares or units to the public. They are split into two subsectors within the financial corporations' sector: Money market funds (MMFs) primarily invest in Islamic bank deposits, while non-money market investment funds (non-MMF investment funds), invest in a wider range of Islamic securities.

26.17 As noted above, the off-balance sheet *restricted investment accounts* which comply with Islamic finance accounting standards are classified as non-MMF investment funds. This is because the cash of the account holders are placed in an investment fund which is managed independently from the Islamic bank, through which these funds are channelled. In addition, a complete set of accounts for the investment fund, including the financial position which shows the equity of the account holders, is maintained. These restricted Islamic accounts should be treated as investment funds because the clients' money is held in segregated investment funds with any losses borne by the providers of the funds, except if these are due to breach of trust or misconduct by the units managing the funds. Furthermore, like conventional investment funds, these accounts distribute the profits from investments to investors in proportion to the value of their investments.

26.18 Collectively organized *Hajj Funds* are also allocated to the non-MMF investment funds' subsector, provided the general conditions for this classification are met. These conditions include that they are legally established entities with autonomous management, and that they maintain a complete set of accounts. These funds, in concert with their long-term saving character, are not restricted to investments in financial instruments and savers bear the risks and rewards of the investments' performance.

Other financial intermediaries, except insurance corporations and pension funds

26.19 Islamic investment banks (that do not accept deposits) and other types of Islamic investment companies are classified as other financial intermediaries. These units typically provide Sharia'ah -compliant (advisory) investment banking services, such as structured finance on large projects or financial leasing (such as *Istisna'a* or *Ijarah*), investment placement activities, raising funds in equity and debt markets (often from joint *Mudaraba),* as well as trade finance (often *Murabaha*). Units involved in instalment sales (such as *Bai Muajjal*) may also be classified in this subsector.

Financial auxiliaries

26.20 *Takaful (insurance) operators* often constitute the main Sharia'ah-compliant business to be classified as financial auxiliaries. These units manage and administer *Takaful (insurance) funds* on behalf of the participants by charging fees to cover their costs (see paragraphs 26.25, 26.26 and 26.44). They do not take economic ownership of the assets and liabilities of these funds. Financial auxiliaries may also relate to managers of investment funds, but not the assets they manage.

Captive financial institutions and money lenders

26.21 *A Waqf Fund* is a religious/charitable endowment, with the donated assets held by a charitable trust. A Waqf is a charitable institution that contracts with a fund manager to establish a dedicated *Waqf Fund*, which is open to the public to make donations by purchasing units of the fund. This reflects the fact that the beneficiary, i.e., the charitable institution, is the sole client and that these vehicles are like endowment funds.

The financial asset of the beneficiary is classified as other equity. Purchases of units in the fund by donors should be recorded as miscellaneous current transfers by donors to the beneficiary. These funds are classified as captive financial institutions.

26.22 This subsector can also include any Sharia'ah-compliant money lenders.

3. Insurance corporations

26.23 There are some parallels between conventional and Islamic insurance (*Takaful*) and re-insurance (*Re-takaful*). At the same time, there are notable differences in the business arrangements. *Takaful* and *Retakaful* funds are included in the insurance corporations' subsector, alongside conventional insurance companies. *Takaful* and *Retakaful funds* share characteristics with conventional insurance and reinsurance, as they also collect contributions (which can be considered as the equivalent of actual premiums in conventional insurance) from participants and have reserves which belong to the policy holders. Islamic windows of conventional insurance corporations are also classified in this subsector, as separate institutional units, given that segregated financial statements have to be maintained for this activity. In the case of *Light Takaful*, where the arrangements are less complex and do not have to be based on *Tabarru* principles, there is no segregation of operators from funds as in the case of conventional insurance. As noted above, *Takaful operators* with segregated financial statements are included among financial auxiliaries.

Some basic features of Islamic insurance

26.24 In accordance with Islamic finance principles, *Takaful* business arrangements avoid uncertainty (sometimes translated as "excessive uncertainty"), gambling and predetermined interest-based investments. The term Takaful means "mutual guarantee". Islamic insurance can therefore be defined as the process in which a group of people – that is, the participants – who face certain risk(s) agree that each of them contributes a specific amount (based on cooperation) to a non-profit fund that is to be used for compensating anyone of them and/or their beneficiaries for the potential loss encountered if the risk in question materializes. In a such an arrangement, the contract is based on mutual assistance (*Ta'awun*) and reciprocal donation (*Tabarru'*), rather than the conventional commercial relationship between an insurance company and a policyholder. In conventional insurance the insurer contracts to provide protection (incurs an obligation) against certain losses by leveraging the accumulated premiums paid by the policyholder (insured), including the returns on investment. In contrast, the "participants" in a *Takaful* scheme are considered simultaneously as the insurer and the insured, since the contributions into the *Takaful fund* belongs to the participants and the operator just manages on their behalf.

26.25 Islamic insurance is distinguished by two types of contractual relationships. The first is the underlying contract used among the group of participants to govern their relationship on the basis of cooperation and solidarity. Members of the group agree to renounce a certain amount of their contribution paid to a *Takaful fund* as a donation in order to provide mutual indemnity to any fellow participant who suffers a loss covered under the policy. In other words, the group of participants agree to guarantee each other and make contributions to the fund instead of paying premiums to cover themselves individually. The fund is the account established by the company (*Takaful operator*) as the insurer to receive (own) the contributions and oversee the reserves and the returns on investment.

26.26 The second is the contractual relationship between the group of participants and the *Takaful operator* appointed by the participants to manage and invest the funds for them. The company is not a typical insurer that takes on a liability. In fact, the operator/manager is usually not part of the insurance sector, but rather part of financial auxiliaries. Generally, the operator manages the relationship and maintains separate accounts with respect to the claims (rights) and obligations of the policyholders. Both the operators and the funds maintain clearly separated accounting records, to conform to Islamic finance accounting standards. However, there is one exception to this rule in the case of *Light Takaful*, which presents consolidated financial statements and looks more like conventional insurance arrangements.

26.27 The *Takaful* arrangements can encompass several types of structures that govern the relationship, such as profit sharing, payment of fees, return, or a combination of these elements. For the various *Takaful* structures,

it is important to emphasize that contributions, returns on investment and the resulting surplus belong to the participants collectively – that is, the returns on investment of contributions belong to the policyholders as a group, after deduction of the administrator's share. Therefore, any surplus can be distributed among participants or given to charity. If claims paid from the fund exceed the amount of premiums, the participants will have to increase their contributions. The policyholders thus typically make the contributions, receive protection (indemnities) against the materialization of risk that has been insured, and can also receive a share of surplus.

Takaful types

26.28 Takaful business types cover general plans and family plans. *General Takaful* provides protection against material loss or any form of damage on a short-term basis (akin to non-life insurance). *Family Takaful* offers a combination of protection and long-term savings, usually covering a period of more than one year. In general, *Family Takaful* is deemed to be a composite plan offering both life and non-life insurance schemes unless specific regulation requires that these schemes be registered separately.

Retakaful is an extension that supports *Takaful* business activities as a form of reinsurance based on Islamic finance principles. It aims to mitigate the risks of business loss of Takaful business and to increase the capacity of direct insurance, in particular for high value properties. Considering the relatively small and still developing *Retakaful* domestic market in many Islamic economies, this could lead to significant cross-border transactions in such activities. In many economies, the domestic *Takaful* and *Retakaful* industry is likely to provide services to non-residents. Conversely, resident units can also purchase these same services from non-resident providers.

Takaful models

26.29 The underwriting surplus in *Takaful* arrangements is the amount calculated as the excess of total premiums/contributions of the policyholders/participants during the financial period over the total indemnities in respect of claims incurred during the period, net of *Retakaful*, and after deducting changes in insurance technical reserves. The surplus should be disposed of in a way that serves the common interest of the participants such as accumulation of reserves, reduction of the contributions, charitable donations and/or distribution among the participants. This also depends on the adopted business model that defines whether the surplus should be transferred only to participants, shared with operators or retained in the fund.

26.30 Various *Takaful* models have been designed according to the underlying contracts signed between the participants and the operator, which first and foremost defines how the latter is compensated for the management of the takaful fund. Four main business models are distinguished:

- *Mudaraba-based Takaful*: the operator (acting as an entrepreneur, or *Mudarib*) is ensured a share of profits generated from the investments of takaful funds;
- *Wakalah-based Takaful*: the operator (acting as an agent, or *Wakil*) is paid an agency fee as a percentage of participants contributions, as determined in the contract;
- *Wakalah-Mudaraba-based Takaful* or hybrid model: the operator signs two contracts and is ensured both a fee as a percentage of contributions and a share of profits; and
- *Waqf Takaful*: covers elements of the charitable endowment (Waqf) in a hybrid model; and, in contrast to the previous models, the surplus is not transferred to the participants but is retained in the *Takaful fund* by the operator.

26.31 In general, the business models adopted for *Family Takaful* differ from those offering only *General Takaful* in terms of disaggregation of the fund into the Participants' Risk Fund (PRF) and Participants' Investment Fund (PIF). In family arrangements, participants contribute to the common pool of funds of which a portion is invested as PIF for the purpose of investment and/or savings; and the other part of contribution is allocated to the PRF to meet claims by participants on the basis of mutual assistance or protection intended, settle *Retakaful* charges, or allocated to reserves.

C. Output of Islamic financial institutions

Introduction

26.32 The methods to calculate the output of Islamic financial institutions depend on how they are allocated to institutional sectors given their financial activities. Measurement may be done on the basis of the explicit fees, the sum of costs, the method applied for implicit financial services on loans and deposits, or a combination of approaches. This section first discusses Islamic financial institutions excluding Islamic insurance, and then turns to Islamic insurance.

1. Measuring output of Islamic financial institutions (excluding Islamic insurance)

26.33 There are different methods used to measure output across the suite of Islamic financial institutions. Some of these employ the methodology for implicit financial services on loans and deposits, in part or in whole, to account for the implicit services provided. This approach, as it applies to Islamic finance, is first discussed below, before turning to the measurement of output for different types of Islamic financial institutions.

Methodology for implicit financial services on loans and deposits in Islamic finance

26.34 The implicit financial services on loans and deposits methodology for Islamic deposit-taking corporations parallels that of conventional financial corporations (see paragraphs 7.180 to 7.189). This reflects the fact that, for some types of financial corporations, explicit service charges alone may not account for the full value of their services. Part of the compensation for the provision of services may be implicitly included in the difference between the returns on the funds provided to those that require funding and the returns on the funds provided by those with surplus funds. In the process of intermediating funds between parties with surplus funds and those that require funding, the relevant financial institutions provide services to both parties. The methodology for implicit financial services on loans and deposits provides a way to measure the services that are not explicitly charged for.

Reference rates and instrument scope

26.35 The general approach is that it is also possible to determine a reference rate in the case of Islamic implicit financial services on loans and deposits, which reflects a service-free rate and can be used to derive the service element on loans and deposits with varying characteristics. More specifically, in line with conventional banking, the implicit financial intermediation services provided by Islamic deposit-taking corporations can be measured as the difference between the return rate paid to banks by borrowers and the reference rate plus the difference between the reference rate and the return rate paid to depositors. The term "return" is used here to describe the broader interest-alternative returns on (non-equity) Islamic financial instruments (discussed in section D).

26.36 This approach could be augmented by using different reference rates for conventional and Islamic Shari'ah-compliant finance, in recognition of the different risk profiles. Whatever the case, different reference rates should be applied for at least two groups of currencies (national and foreign currency) in cross-border transactions of Islamic deposits and loans – that is exports and imports of such implicit services. The rate should be taken from the financial markets of the home market of the currency.

26.37 With respect to the issue of one or more reference rates, the objective testing results (conducted in 2023) with a select group of Islamic countries generally indicated that the estimates of nominal implicit financial services on loans and deposits and their annual growth rates did not differ significantly from conventional finance. Thus, while the principles of Islamic finance prohibit the payment of interest, the nature of financial intermediation services of conventional and Islamic deposit-taking and lending seems to be broadly similar. Accordingly, it is recommended that only one reference rate be used to calculate implicit financial services on loans and deposits denominated in the same currency, unless there is evidence that a different reference rate should be used to calculate implicit financial services on Islamic deposits and loans (see paragraphs 7.180 to 7.189).

26.38 These Islamic implicit services should preferably be applied to total loans and total deposits (where relevant), rather than applying a more complex instrument-by-instrument approach. The latter was considered given that some Islamic instruments pay no investment income (see section E below for a description of Islamic financial instruments).

Measures of output for different types of Islamic financial institutions

26.39 The various methods to measure output for Islamic financial institutions are summarized below. In the case of implicit financial services on loans and deposits, the terminology reflects that of investment income (discussed in section D).

Central bank

26.40 For the central bank, monetary policy services, supervisory services and other services (e.g., the management of financial stability, and managing the payments system) are considered as collective services. Central banks do not undertake implicit financial services on loans and deposits in the traditional sense. Central banks are atypical financial intermediaries which take on liabilities and engage in lending, but mainly for the purpose of monetary policy and other public functions. As a result, all of their services are considered non-market output, to be calculated at the sum of costs (see paragraphs 7.166 to 7.170).

Deposit-taking corporations except the central bank

26.41 Deposit-taking corporations (except the central bank) include Islamic banks and Islamic windows in conventional banks. In these cases, financial intermediation services are estimated as a combination of explicit fees and commissions (direct services) and implicit financial services on loans and deposits. For the latter, the services on loans and deposits are calculated as follows:

Implicit financial services on loans and deposits = $(r_L - rr) \times Y_L + (rr - r_D) \times Y_D$

where,

r_L = the lending return rate

r_D = the deposit return rate

rr = reference rate

Y_L = average stock of loans

Y_D = average stock of deposits

Investment funds

26.42 In the case of both Sharī`ah-compliant money market funds and non-MMF investment funds, output can be calculated in the same way as for conventional investment funds. Therefore, output is estimated as the sum of various fees that these funds charge investors on transactions and positions. This includes purchase and redemption fees, exchange fees, account fees, and operating fees. However, for *Hajj Funds* and off-balance sheet restricted investment accounts, output is measured using the sum of costs, except in the case of implicit financial services may need to be calculated for any loans on the financial statements such as *Murabaha* or *Ijarah* (see section E for a discussion of Islamic financial instruments).

Other financial intermediaries, except insurance corporations and pension funds and Sharī`ah-compliant money lenders

26.43 Islamic investment banks and other types of investment companies are included in the other financial intermediaries' subsector. For these types of institutions, output includes both explicit and implicit fees. In addition, for any Sharī`ah-compliant money lending services included in the subsector of captive financial

institutions and money lenders, measures of output combine explicit charges and implicitly measured financial services. The latter service element can be calculated as follows:

Implicit financial services on loans (and deposits) = $(r_L - rr) \times Y_L$

where

r_L = the lending return rate

rr = reference rate

Y_L = average stock of loans

Financial auxiliaries

26.44 For financial auxiliaries engaged in the management of Sharī`ah compliant investments and funds brokerage, such as *Takaful funds* and other types of investment funds, output is measured as the explicit fees charged to clients, such as the fees payable by the *Waqf Fund* to the fund manager. In the case of *Takaful operators* included in this subsector, the explicit fees approach is also used. Output is equivalent to the *Wakalah* fees they charge to administer the funds and/or the share of profits earned from the investment of those funds, depending on the structure.

Captive financial institutions and money lenders

26.45 For other Sharia'ah compliant institutional units included in the subsector of captive financial institutions and money lenders, output is measured using either explicit fees or sum of costs. In the case of *Waqf Funds* in this subsector, output is typically calculated as the sum of costs. Although the associated fees are costs that are contractually payable by the fund rather than by the beneficiary, they are shown as payable by the beneficiary to the fund because they are payable out of profits (with *Waqf Fund* profits as property income to the beneficiary). For money lenders the implicit financial services on loans are calculated as noted above (see paragraph 26.43).

2. Islamic insurance output

26.46 The services provided by Islamic insurance diverge from those provided by conventional insurance, reflecting the fact that Islamic insurance processes are arranged differently than those of conventional insurance. The Islamic service component would be identified under the *Takaful* contract and different options may be considered depending on the business model adopted. In addition, the output of operators and funds reflect that they are separately classified as institutional units, except in the case of *Light Takaful*.

26.47 *Takaful operators* manage, administer and invest the funds on behalf of the participants by charging fees to cover their costs. In this case, output is measured as the *Wakalah* fees they charge to administer *Takaful funds* and/or the share of profits earned from investing these funds, as noted above under financial auxiliaries.

26.48 For *Takaful/Retakaful funds*, including both family and general plans, output is measured as the sum of costs. This is the *Wakalah* fees they pay to *takaful operators* and/or the share of profits payable to *takaful operators* plus any other intermediate consumption. Given the similar economic features between *Takaful funds* and *Takaful windows*, the output of windows is also measured as the sum of costs. Given that *Light Takaful* (no distinction between operators and funds) is more similar to conventional insurance arrangements, the methods described in paragraphs 7.205 to 7.221 should be used to measure output.

D. The nature of returns on Islamic instruments in the allocation of earned income account

1. Background

26.49 In the context of Islamic finance, the prohibition of "riba" (normally translated as interest) means that a provider of finance cannot impose a fixed or unconditional charge that is independent of the borrower's use of the funds. Sometimes, a provider of funds may expect a reward from the borrower on a discretionary basis. For these reasons, terminology such as *profits*, *gifts* or *returns* is typically used instead of interest in Islamic accounting. However, to better align to the terminology applied in the SNA, a more general term including such types of returns is required. A generic term like "similar returns" appended to interest is the option chosen. Interest and similar returns can apply to Islamic finance as well as other situations of non-conventional finance.

2. Returns on Islamic instruments

Interest and similar returns

26.50 The broader term "interest and similar returns" accommodates related returns associated with Islamic finance. The concept of "similar returns" complies with Shari'ah principles and is used to describe the broader interest-alternative returns on certain Islamic debt instruments. Retaining the term "interest" in the proposed terminology ensures continuity with the current terminology in the SNA to describe the investment income on conventional deposits, loans, debt securities and also, albeit less often, other accounts receivable/payable (see paragraph 25.195). This approach enables the integration of Islamic financial instruments and their associated income within the existing macroeconomic statistical frameworks and eliminates the need for developing alternative classification frameworks for Islamic finance. The Islamic financial arrangements that generate investment income are discussed in section E below. Some of these constitute equity-like instruments and generate equity-like return (e.g., dividends), but also do not require introduction of new terminology.

26.51 There are two key benefits to this approach. First, it preserves the universality of international statistical standards; and second, it accommodates economies with significant Islamic financial activities by incorporating the investment income for Islamic financial instruments in the standard breakdowns of investment income. Table 26.1 below displays additional and supplementary details related to returns on Islamic instruments and their classification in SNA (for a more complete overview, see the annex to this chapter).

Table 26.1 Property income, including details on Islamic finance

Earned income account in SNA
Property income
Investment income
Interest
Deposits
Loans
Debt securities
Similar returns
Islamic deposits
Islamic loans-financings
Islamic debt securities
Income on equity
Dividends
Withdrawals from income of quasi-corporations
Reinvested earnings on foreign direct investment
Investment income disbursements
Rent

E. The classification of Islamic financial instruments in the accumulation accounts and balance sheet

1. Background

26.52 There are numerous types of Islamic financial arrangements that can be broadly mapped to the financial instruments applied in the SNA. As noted above, lacking a concept of interest earnings, Islamic financial corporations often generate income through arrangements such as the financing of sales or the leasing of underlying goods, sometimes including equity financing. These items can generate returns under *Interest and similar returns*, as discussed in section D. Notably, some of these arrangements may apply to more than one of the financial instruments in the SNA, depending on variations in the defining characteristics of each contract.

26.53 Several factors need to be considered in the instrument classifications, including:

- The type of institutional unit represented by the recipient of the finance: an equity classification for an instrument will only be possible for an unit that is classified as a corporation;
- Whether or not the financial instrument is designed to provide a profit that has a comparatively high reliability as compared to its magnitude;
- Whether or not the financial instrument is recorded on the balance sheet of the Islamic financial institution;
- Whether or not the investment account holder has a claim on ventures or funds offered by the issuing institution;
- Whether or not the investment account holder has a claim on the residual value of the issuing institution;

- Whether or not the lender is the supplier of the goods or services being financed, which may determine the classification as either a trade credit or a loan;
- Whether or not the financial instrument provides negotiable securities, for example in the form of participation term certificates; and
- Whether or not equity holdings, in the case of foreign investment, exceed the 10% required threshold for a foreign direct relationship to exist.

26.54 The discussion below focusses on the classification of individual Islamic financial instruments in the SNA. In this respect, it should be noted that the list of Islamic financial instruments discussed below and also listed in the annex to this chapter is not exhaustive. However, the compiling agencies can use the argumentation in the following subsections to classify Islamic financial instruments which are not included in the discussion.

2. Islamic financial instruments classified as currency and deposits

26.55 *Qard, Wadiah, and Amanah* deposits can be withdrawn on demand, at par, without penalty or restriction, and are generally usable for making payments by check, draft, giro order, or other direct payment facilities. These types of deposits are not linked to any profit-making ventures and are not part of the profit and loss sharing schemes. As a result, Islamic financial institutions have flexibility in the use of the funds, but they are required to guarantee the nominal value of the deposits. As a result, these deposits usually offer no returns or, in some cases, very small returns on the basis of gifting (*Hibah*). These instruments may be classified as transferable deposits or other deposits.

26.56 *Qard-Hasan* are another form of return-free deposits, voluntarily placed by depositors to participate in the provision of funds for needy individuals or for social purposes. These may also be provided for specific purposes, as determined by the depositor. In all cases, it is interest-free and is meant to help stabilize cash flows or cater to funding needs that cannot be met using commercial arrangements. These instruments are to be classified as other deposits.

26.57 *Restricted Mudaraba* funds are funds where the investor restricts the manner as to where, how, or for what purpose the funds are invested. No mixing of funds is allowed from other sources to ensure proper management and accountability of the funds. The Islamic financial institution manages the funds either as *Mudarib* (in which the investor is engaged in risk-sharing), or as *Wakil* (i.e., provision of intermediation services for a fixed fee with no participation in the investment results). *Restricted Mudaraba* held on-balance sheet should be classified as other deposits.

26.58 *Unrestricted Mudaraba* funds are funds where the investor fully authorizes an Islamic financial institution to invest the funds without restrictions as to where, how, or for what purpose the funds should be invested, as long as it is deemed appropriate. The mixing of funds from other sources (including shareholders' funds) is permitted and separate disclosure in the financial statement is therefore required. *Unrestricted Mudaraba* can be divided into three distinct types, two of which are discussed below, while a third type is discussed below under equity and investment fund shares/units.

- *Mudaraba not fixed deposits* are accepted without a specified time frame (not fixed), hence the investors are free to withdraw their money at any time. This type of unrestricted accounts can be considered analogous to saving deposits at a conventional financial corporation and should be classified under other deposits.
- *Mudaraba fixed deposits* are accepted for a fixed period that provides an opportunity for Islamic financial institutions to invest in more profitable long-term projects. This type of unrestricted account can be considered as analogous to a time deposit at a conventional financial corporation and will usually generate higher returns than non-fixed period deposits. These are also classified as other deposits.

26.59 In the case of *Wakalah deposits*, the bank acts as an agent for the investment of depositor's funds in exchange for a fee, usually in the 1.5 to 2 per cent range. Depositors are offered an indicative or nominal return. If the actual return is lower, the depositor only receives this latter return; if the actual return is higher, the bank only pays the indicative return and keeps any excess as an "incentive fee". Because of the possibility of the

bank earning this incentive, it will often not charge a fee. These instruments can be classified as either transferable deposits or as other deposits.

26.60 *Profit and loss sharing certificates* are investors' deposits that resemble shares but do not provide a claim on the residual value of the Islamic financial institution and participation in its governance. The certificates should be classified as other deposits if non-negotiable.

3. Islamic financial instruments classified as debt securities

26.61 *Mudaraba, fixed with mudaraba certificates* are arrangements accepted for a fixed term, by way of negotiable instruments (called investment deposit certificates or *Mudaraba certificates*). This type of unrestricted investment has characteristics similar to those of conventional market securities and is typically classified as a debt security, if not part of the own funds of the financial institution. A separate disclosure of off-balance sheet positions is required to be kept by the Islamic financial institution.

26.62 *Sukuk* are investment certificates issued by Islamic financial institutions to obtain funding. *Sukuk* (plural of *Sakk*) are certificates (commonly known as Islamic bonds), with each representing a proportional undivided ownership right in tangible non-financial assets, financial assets, right to use others' assets (*Usufruct*), services, a pool of predominantly tangible non-financial assets, or a business venture (such as *Mudaraba* or *Musharaka*). These assets, which must be clearly identifiable, may be in a specific project or investment activity in accordance with Shari'ah rules and principles. *Sukuk* might often be thought of as providing a securitization wrapper around an underlying contractual arrangement. If they involve an intermediate legal structure such as a special purpose entity (SPE), then consideration of whether the SPE should be recognized as an institutional unit may be required, depending on the legal and other specific circumstances. The following three types of sukuk contracts are the most prominent: (i) *Sukuk Ijarah*; (ii) *Sukuk Musharaka*; and (iii) *Sukuk Murabaha*, which are all negotiable instruments, although the last type of arrangement only becomes negotiable when certain conditions are met. Different types of *Sukuk* will have fixed income properties, equity-like properties, or more complex types of arrangements for the returns, as follows:

- *Fixed Income Sukuk* are instruments which are normally either sale or lease based. Sale based contracts represent a debt, and therefore may not be bought/sold in the secondary market at other than par value. Lease based contracts such as *Ijarah* do not have secondary market restrictions as the revenue streams are based on a underlying tangible non-financial asset. *Ijarah Sukuk* also typically have a redemption payment, representing the return of beneficiary's share in the underlying tangible non-financial asset back to the issuer. Examples include: *Murabaha* (sale at mark-up); *Salam* (forward commodity sale); *Istisna'a* (manufacturing sale); and *Ijarah* (lease based).
- *Variable profile Sukuk or Wakalah Sukuk* represent an agency arrangement in which the *Sukuk* holder delegates responsibility to the issuer to carry out Shari'ah compliant revenue generating activity. The precise nature of this activity can vary, and it can encapsulate other transaction types within it (e.g., *Ijarah*, *Murabaha*, etc.). The aggregate return on the activity may be either fixed or variable, depending on the agreement between the counterparties.
- *Hybrid Sukuk* may vary in form at different points in their life cycle. For example, *Istisna'a* plus *Ijarah Sukuk* may be used by an issuer to raise funds to first construct an asset before leasing it out.

26.63 *Profit and loss sharing certificates* are investors' funds that resemble shares but do not provide a claim on the residual value of the Islamic financial institution and participation in its governance. The certificates should be classified as debt securities if they are negotiable.

26.64 *Participation term certificates* are long-term investment instruments that entitle the holder to a share of an Islamic financial institution's profit. These certificates should be classified as debt securities if the certificates concern debt liabilities of the institution.

4. Islamic financial instruments classified as loans

26.65 *Qard-Hasan financing* is a return-free financing that is made to needy individuals or for some social purpose.

This financing is usually extended on a goodwill basis, and the debtor is required to repay only the principal amount of the financing. The debtor may, however, at his or her discretion, pay an extra amount beyond the principal of the financing (without promising it) as a token of appreciation to the creditor.

26.66 In a *Murabaha financing* contract, an Islamic financial institution purchases goods upon the request of a client, who usually makes deferred payments to the financial institution that cover costs and an agreed upon return. These contracts resemble collateralized loans within conventional finance, in which the underlying goods, such as properties or automobiles, are registered under the customer's name and are used as collateral. The disclosure of the cost of the underlying goods is required. The financial institution handles the payments to the supplier including direct expenses incurred (delivery, insurance, storage, fees for letter of credit, etc.). Operating expenses of the financial institution are not included. This arrangement can be defined as a sale of goods at cost plus profit margin.

26.67 *Tawarruq financing (commodity Murabaha)* is a financial instrument in which a buyer purchases a commodity from an Islamic financial institution on a deferred payment basis, and the buyer sells the same commodity to a third party on a spot payment basis. This is an extension of *Murabaha* whereby the financial institution arranges for the sale of the item. The buyer basically borrows the cash needed to make the initial purchase. Later, when cash is secured from the second transaction, the buyer pays the original seller the instalment or lump sum payment he owes (which is cost plus markup).

26.68 *Mudaraba financing* constitutes a partnership between an Islamic financial institution and a client in which the institution provides capital (*Rab al-Mal*) and the client provides skilful labour. This financing is a type of partnership whereby skill and money are brought together to conduct business. Profits generated from the business are shared according to the agreement, while losses are borne fully by the capital provider, except when losses are due to misconduct, negligence, or violation of the agreed conditions by the client. Although this arrangement has features of equity, it has a fixed-term nature and therefore represents a fixed-term claim on the client rather than a claim on any residual value.

26.69 *Musharaka* represents a partnership between an Islamic financial institution and an enterprise in which both parties contribute to the capital (*Rab al-Mal*) of the partnership. The financial institution and client agree to share any profits generated from the venture according to the pre-agreed ratio, with any losses shared according to the ratio of contribution. This type of financing can be structured as a loan where the financial institution provides financing in the form of working capital to an unit but does not have a claim on the residual value of the debtor enterprise.

26.70 *Mushtarakah* is a combination of both *Musharaka* and *Mudaraba*. It can be treated as loans if there is no residual claim on the value of the debtor unit.

26.71 *Bai Muajjal* is a type of financing provided by an Islamic financial institution to its client by supplying desired commodities or services with deferred payments. This contract is classified as loans if the supplied commodities or services are from third parties.

26.72 *Bai Salam* is a short-term financing agreement in which an Islamic financial institution makes full prepayments (spot payment) for future (deferred) delivery of a specified quantity of goods on a specified date. The financial institution and a supplier may engage in such a contract, in which the supplier agrees to sell goods prior to the goods being delivered. Generally, the agreed spot price is less than the future price of the goods, which ensures a return to the financial institution. This arrangement should only be classified as loans if the goods or services produced are not for the financial institution's own use.

26.73 *Istisna'a financing* is a partnership between an Islamic financial institution and an enterprise, usually a manufacturer or a construction company, whereby the financial institution places an order and provides financing to the enterprise to manufacture/construct and supply certain goods or buildings. Upon or before the delivery of the order, the financial institution usually enters into a contract with another party (the ultimate purchaser) at a price higher than the original contract of the *Istisna'a*, thus generating profits. These arrangements are classified as loans, if the produced goods or constructed buildings are for the use of the ultimate purchaser. *Ju'alah* is essentially an *Istisna'a* contract applicable to provision of services. They should also be classified as loans if the services are not for the financial institution.

26.74 *Bai bil wafa or Bai bil-istighlal* are sales (ba'i) in which the seller has the right, as stipulated in the contract, to repurchase the underlying property (real estate) from the buyer by refunding the purchase price. The right

of redemption is given to the original seller upon an understanding that the buyer will give (i.e., resell) the property back to the seller and receive the original price. The buyer agrees to honour that understanding and hence the name *Wafa* which means to honour.

26.75 An *Ijarah* is a contract in which an Islamic financial institution purchases capital equipment or property and leases it to an enterprise. The financial institution may either rent out the equipment (simple *Ijarah*) or receive a share of the profits earned through its use. There are two types of more sophisticated *Ijarah*.

- *Ijarah Muntahia Bittamleek (Ijarah MBT)*) is a hybrid instrument and can be arranged as a pure operating lease or as a lease-to-own arrangement.
- In the case of the pure operating lease version of *Ijarah MBT*, the title for the underlying asset is not transferred to the client (lessee), and ownership risks of the assets are borne by the Islamic financial institution (usually through a separate unit that it owns). *Operating ijarah* should be treated in the same way as a conventional operating lease (rental agreement for some non-significant portion of the asset's economic life) and does not give rise to a financial instrument. It is discussed only to distinguish it from *Ijarah MBT* and *Ijarah Wa-Iktina* below.
- In the case of the *Ijarah MBT* lease to own arrangement (or *financing Ijarah*), the title for the underlying asset may be transferred to the lessee over the term of the lease or at the end of the lease arrangement. This makes it resemble a conventional financial lease in some ways, however the risks and rewards incidental to ownership remain with the lessor throughout the lease term until the asset is transferred to the lessee. To this end, there can be both a lease contract and a transfer of ownership contract involved. This arrangement generally constitutes a long-term lease, and the lessee could be considered the economic owner (but not the legal owner) in the integrated framework of the SNA. This form of *Ijarah* should be classified as loans over the period of the lease.
- *Ijarah Wa-iktina* is the financing of an acquisition of an underlying asset under a lease-to-purchase arrangement, and it involves two stages. The first stage is the lease of underlying asset over the lease period, which covers the majority of the asset's economic life, and for which the lessee is effectively considered the economic owner (but not the legal owner) in the integrated framework of the SNA. The second stage is the transfer of ownership of the residual value of the asset at the end of the lease period. This arrangement, which is similar to a conventional financial lease, should be classified as loans over the period of the lease.

5. Islamic financial instruments classified as equity and investment fund shares/units

26.76 As noted above, a *Mudaraba contract* is a partnership of the Islamic financial institution and the client. *Restricted Mudaraba* that are held off-balance sheet should be classified as shares (i.e., part of equity). A separate disclosure of off-balance sheet positions is required to be kept by the Islamic financial institution. *Mudaraba fixed with Mudaraba certificates* constitutes *unrestricted Mudaraba* arranged through negotiable instruments with characteristics similar to those of conventional securities, and are also classified as shares if considered part of own funds.

26.77 *Participation term certificates* are long-term investment instruments that entitle the holder to a share of a corporation's profit. These certificates are treated as shares if considered part of own funds.

26.78 As noted above, *Sukuk instruments* constitute investment certificates issued by Islamic financial institutions to obtain funding. These should only be classified as shares, if the owner of the security has a claim on the residual value of the issuing unit. *Equity-like sukuk* are instruments normally based on some sort of partnership arrangement, with the risk/reward sharing ratio agreed ex ante. In these contracts, it is impermissible for one party to provide a guaranteed fixed payment (either in terms of periodic return or maturity payment) to the other. *Mudaraba sukuk* can resemble *Wakalah* in terms of cashflows, but the contractual relationship between parties will differ. Examples of these arrangements include *Musharaka* (pure partnership) and *Mudaraba* (silent partnership or '*Commenda*').

26.79 *Musharaka* constitutes a partnership between an Islamic financial institution and an enterprise in which both parties contribute to the capital (*Rab al-mal*) of partnership. In this type of arrangement, the financial institution and client agree to share any profits generated from the venture according to the pre-agreed ratio; a loss is shared according to the ratio of contribution. This type of financing is classified as shares when the

financial institution acquires a claim on the residual value of the enterprise.

26.80 *Mushtarakah* is a combination of both *Musharaka* and *Mudaraba*. It can be treated as shares if there is a residual claim on the value of the debtor unit.

6. Islamic financial arrangements identified as financial instruments related to insurance, pension and standardized guarantee schemes

26.81 The Islamic financial arrangements discussed below are treated as insurance type of arrangements, with the related assets of the participants and the related liabilities of the provider being recorded as insurance technical reserves.

26.82 The *Mudaraba Takaful model* is based on the Islamic financial instrument known as *Mudaraba* that relies on the principle of profit sharing. In this model, the *Takaful operator* is the entrepreneur (*Mudarib*) providing management skills or labour. The operator is appointed by the participants, who act as investors or fund contributors (*Rab al-mal*). Any surplus or profit resulting from takaful fund investments are shared between the *Takaful operator* and *Takaful fund* according to a pre-agreed ratio, while the possible losses are borne only by the *Takaful fund* unless there is element of negligence from the *Takaful operator*.

26.83 The *Wakalah Takaful model* is based on the Islamic financial instrument known as *Wakalah* – a contract between the Takaful participants and the *Takaful operator* that acts as an agent (*Wakil*). Any surplus realized from the investment of the participants' funds will go to the participants only, as the *Takaful operator* is entitled to an agency fee for the services rendered on mutual agreement and the predetermined terms in the contract. The profit and the losses derived from the operations of *Takaful fund* and the investments belong to *Takaful fund* only.

26.84 *Hybrid Takaful* is an Islamic insurance contract that is structured to combine more than one financial instrument.

- The *Wakalah-Mudaraba* model combines the features of two models. According to this hybrid model, the participants and the *Takaful operator* sign two contracts: as per the *Wakalah* contract, the operator is entitled to a fee from the contributions paid by the participants; and as per the *Mudaraba* contract the operator is entitled to the predetermined share of profit gained from the investments of the *Takaful fund*.
- Another hybrid model is *Waqf-Wakalah-Mudaraba* that integrates elements of the charitable endowment *Waqf* in the above arrangement, where no party gets the underwriting surplus so that the original contributions remain in the common pool for the purpose of reinvestment and to enhance sustainability.

7. Islamic financial instruments classified as financial derivatives and employee stock options

26.85 Financial derivatives have a prominent role in conventional finance, but less so in Islamic finance. The prohibition of gambling and excessive uncertainty/risk as well as short sales or financing activities considered harmful to society, significantly limit the use of derivative contracts in this environment. Moreover, although certain types of forward sales are permitted, these do not necessarily qualify as derivative contracts.

26.86 That said, derivative contracts whose sole purpose is hedging (that is, to minimize any risk exposures) do not seem to be incompatible with Shari'ah principles. Therefore, Islamic financial institutions may enter into derivative contracts purely for hedging purposes (regardless of what the counterparty's objective might be), and this is indeed the case in some countries. More generally, it can be noted that the use of financial derivative types remains a somewhat open-ended issue in Islamic finance in terms of a treatment that can be applied across economies. As a result, their use varies across jurisdictions, depending upon the domestic Shari'ah regulators and legislation.

8. Islamic financial instruments classified as other accounts receivable/payable

26.87 Other accounts receivable/payable in the integrated system of national accounts includes both trade credit and advances and other accounts not related to the provision of goods and services, such as amounts receivable/payable related to taxes, wages and salaries, social contributions, etc. Only trade credit and advances have equivalent Islamic financial instruments, as follows:

- *Istijrar* financing, which refers to an agreement where the buyer purchases commodities, under a single agreement, from a supplier from time to time in different quantities.
- *Istisna'a* financing (see paragraph 26.73), which relates to goods or buildings for the Islamic financial institution's own use. A *Ju'alah* contract is essentially an *Istisna'a* that applies to services as opposed to a manufactured good.
- *Bai Muajjal* financing (see paragraph 26.71), which is classified as trade credit if it is a direct extension of credit by the supplier.
- If the associated goods or services in *Bai Salam* financing (see paragraph 26.72) are for use by the Islamic financial institution (lender), the arrangement would be considered trade credit.

F. Economic ownership of non-financial assets under Islamic financial arrangements

1. Special considerations in Islamic finance and the regulatory framework

26.88 The integrated framework of the SNA makes a clear distinction between legal ownership and economic ownership. The legal owner of assets or products is the institutional unit entitled by law to claim the economic benefits associated with those items. The legal owner may transfer (through a contract) the risks and rewards related to the use of the relevant assets to another economic agent. This other agent then becomes the economic owner and is the institutional unit entitled to claim the economic benefits, or rewards, associated with the use of the assets in production by virtue of accepting the economic risks over the relevant period. Usually, the legal owner coincides with the economic owner, but when this is not the case, the relevant assets are allocated to the sector of the economic owner. This distinction is also relevant for the recording of Islamic finance in national accounts and external accounts, though Islamic accounting standards may suggest otherwise.

26.89 Islamic finance accounting standards recommend recording the ownership of the underlying non-financial assets in the balance sheets of the Islamic financial institutions (or institutional units who may be lessors). This is the case, even though they may not actually use the assets in their productive activities, or they may hold them only briefly. In other words, the focus in the accounting standards is on legal ownership. Consequently, one interpretation of the financial statements of Islamic financial institutions suggests that they are comparatively more involved in (and more exposed to) non-financial activities than what is actually the case. Of course, this interpretation also ignores the issue of economic ownership.

26.90 Another interpretation, arguably more consistent with shared relationships in principles of Islamic finance as well as the related guidance for conventional finance, is that the economic ownership rests with the users of the assets. Therefore, the user of the non-financial asset can be determined to be the economic owner in most cases. Thus, there is a need to account (in a macroeconomic statistical sense) for the role of Islamic financial institutions and instruments under these arrangements as well as the nature of their economic activities under certain arrangements. This provides a means to determine the economic ownership, or changes in economic ownership, of the relevant assets.

26.91 With respect to the treatment of economic ownership in financing arrangements, it is useful to consider the following two complicating points. First, Islamic financial institutions (in particular banks) undertake various economic activities and may set up separate units to facilitate these activities, either consolidated in their financial statements or unconsolidated (as separate wholly owned institutional units). Therefore, in some of these arrangements, it is possible that Islamic financial institutions have established separate institutional units (which could be non-financial units), often in partnership with other institutional units, which will then be the legal and economic owner of the underlying assets. One example is real estate investment whereby

Islamic financial institutions can co-invest in a venture with other units (say, a construction firm) to develop properties which the financial institution's subsidiary temporarily owns (at least until they are sold to the final user). If so, this does not change the arrangement materially. Second, regardless of whether a separate institutional unit is set up, Islamic financial institutions can sometimes act as facilitators by transferring the economic ownership of the items from the seller to the client (the participant which intends to make use of these assets) which would take on financial risk in the process. This possibility does change the arrangement and does allocate economic ownership at the outset. In both cases, not recording the economic ownership of the underlying assets in the balance sheets of Islamic financial institutions (or their wholly owned subsidiaries) helps to better articulate their role as providers of financial services that facilitate the transfer of non-financial assets or products. Besides, the often-brief ownership of such items by Islamic financial institutions could be considered as a form of constructive possession (*Qabd Hukmi*) or physical possession (*Qabd Fe'eli*) and should not be considered as economic ownership.

2. Economic ownership under different types of Islamic financial arrangements

Background

26.92 This section focuses on the ownership of non-financial assets related to sales, leasing, pure lending and equity financing and its treatment in Islamic finance accounting frameworks. It also touches on other similar Islamic financing arrangements which are typically based on trading models or profit and loss sharing models involving underlying non-financial assets or products. This section invariably relies heavily on the above discussion of financial instruments in section E.

26.93 The ultimate purchasers of the underlying non-financial assets are considered as the economic owner of the assets obtained through Islamic financial institutions' arrangements. The economic owners claim the economic benefits and assume the risks associated with their use. The time of the acquisition of the underlying items is assumed to be the time at which the economic ownership changes hands. When a change of ownership is not obvious, the time at which the assets enter into the books of the transaction partners may be a good indication and, failing that, the moment when physical possession and control is acquired.

Economic ownership structures

26.94 A convenient way to group transactions and positions in Islamic financing instruments is an aggregation by term as well as by characteristics and purpose. From that perspective, economic ownership for the different arrangements can be better assessed. The discussion below is not deemed to be exhaustive but provides a general assessment on the issue of economic ownership.

Shorter-term financing

26.95 Where the Islamic financial institution acquires goods or services for its own use, then it is the economic and legal owner of these products. However, it is more relevant to focus on shorter-term financing related to sales of goods and services where a purchaser/user other than the Islamic financial institution is the owner, or at least the economic owner, early in the arrangement. In these cases, the Islamic financial institution has only a financial claim on the borrower, especially where the products are of relatively low value. Different treatment may apply, depending on the characteristics of the financial arrangement.

26.96 Sometimes, the Islamic financial institution takes legal ownership of products for a very short period (e.g., *Murabaha*), before selling it. However, the intent of most of these financial arrangements usually is the facilitation of a purchase by the client and ultimate user. When the products are sold, the final user is the legal and economic owner, while the financial institution will have a claim on the client for the amount financed.

26.97 In other arrangements, the Islamic financial institution holds the products for a period of time. Take the example of a spot purchase of goods for a future sale, sometimes at a higher price (e.g., *Bai Salam*). While the financial institution may become the legal and economic owner for that period only, for economic

accounting purposes, the purchasers/users are considered the economic owners (in the case of a loan) of the products since they ultimately claim the economic benefits and assume the risks associated with their use (see paragraph 26.72). When the goods are subsequently acquired by the users, then they will become the legal and economic owners. Another example is a *Bai bil Wafa/Bai bil-Istigal* contract where the financial institution purchases a non-financial asset and pledges to sell it back to the client at a fixed future date, which makes the purchasing financial institution the legal and economic owner for a (typically short) period of time.

26.98 A last arrangement to consider is an operating lease (simple *Ijarah*) which is a rental agreement for a period that does not cover a significant portion of the non-financial asset's economic life (see paragraph 26.75). The lessee must return the item at the end of the lease term and does not have an option to purchase. The lessor, in this case the Islamic financial institution, is both the legal and economic owner of the asset (usually through a separate unit that it owns), as it assumes the risks and rewards related to the ownership of the asset.

Longer-term financing

26.99 Substantive issues with respect to economic ownership of a financed non-financial asset arise in the case of the acquisition of relatively high value goods, construction, or project finance over an extended period of time. That financing can be in the form of loans, such as with *Istisna'a*. One can distinguish a period of time where the Islamic financial institution makes progress payments to the contractor. In this period, the financial institution may be considered the legal and economic owner of the asset. However, for economic accounting purposes, the customers who request the construction or manufacturing of the said non-financial asset are considered the economic owners of the products since they ultimately claim the economic benefits and assume the risks associated with their use. Nevertheless, the financial institution holds a claim on the asset until the debt is extinguished.

26.100 Other types of longer-term financing arrangement are *Mudaraba financing* and *Musharaka partnerships*. In both instances the Islamic financial institution only provides funding, though it may share in the profits (*Musharaka*). The underlying non-financial assets are economically owned by the party that uses those assets in production, even though the financial institution can remain the legal owner for the duration of the financing agreement.

26.101 Financial leases (*Ijara Wa-iktina*) constitute another form of longer-term financing where economic ownership is clear. The lease term typically covers a substantive portion of the economic life of the assets, and the lessee has the option of purchasing the asset at the end of the lease period. The arrangement is treated as a loan. The lessee is, for economic accounting purposes, considered the economic owner. The financial lease also provides a return for the lessor, i.e., the Islamic financial institution, to compensate it for providing the financial means to acquire the asset. The lessor is also entitled to the residual value of the leased asset at the end of the lease term, either as payment for the purchase of the depreciated asset by the lessee, or by getting economic ownership of the depreciated asset.

3. Economic ownership of non-financial assets in the case of a client's default

26.102 For items acquired for use by a financing contract, defaulting on the corresponding payments is an issue that may arise in Islamic finance. Given Shari'ah principles' social benefit aspects incorporated in Islamic finance, it stands to reason that, in several cases, economic ownership is unaffected when the economic owners of non-financial assets default on their payments in financing arrangements such as *Murabaha* and *Istisn'a*. It can be argued that the default only relates to the financial payment, not to the full arrangement itself. Any contract with profit sharing or participation cannot be considered in full default, so the user would remain the economic owner. Therefore, it can be assumed that defaulting clients will remain the economic owners, but there are likely some non-mutually exclusive and complicating considerations.

26.103 It is possible, however, that default actually leads to a change in economic ownership. If, for example, the Islamic financial institution determines that the borrower did not enter into a contract in good faith, then the institution (subject to the clauses of the contract) could repossess the assets and temporarily become the economic owner as well as the legal owner, while the borrower could face a penalty. Also, in the case of a shortage of a particular asset (e.g., dwellings), or in the case of neglect of the maintenance of the asset, the

financial institution may be able to find a more worthy or needy client. A further consideration might relate to the nature of the default. For example, it could be the case that circumstances indicate that the non-performing loan is a write-off, and the borrower is not expected to ever be able to repay. In this case, a change of economic ownership may be warranted. In other words, it all depends on the details of the situation, in addition to the type of financing and the actual use of the asset (e.g., a community building versus a business asset).

26.104 Lastly, and more specifically, for financial leases or *Ijara Wa-Iktina* the situation might be clearer. It is likely that in some or many of these instances the lessor will seek to find another lessee.

Annex: Classification of Islamic financial instruments and income

Instrument	Integrated framework of national accounts
Qard, Wadiah, and Amanah	FAB: Transferable deposits or Other deposits Income: Interest and similar returns
Qard-hasan	FAB: Other deposits Income: Interest and similar returns
Restricted Mudaraba funds	FAB: Other deposits or Equity Income: Interest and similar returns or Dividends
Mudaraba – fixed Mudaraba - not fixed	FAB: Other deposits Income: Interest and similar returns
Mudaraba – fixed with mudaraba certificates	FAB: Debt securities or Equity Income: Interest and similar returns or Dividends
Participation term certificates Sukuk (generally) Sukuk (Variable profile)	FAB: Debt securities or Equity Income: Interest and similar returns or Dividends
Sukuk (Equity-like)	FAB: Equity Income: Dividends
Sukuk (fixed-income)	FAB: Debt securities Income: Interest and similar returns
Wakalah deposits	FAB: Transferable deposits or Other deposits Income: Interest and similar returns
Murabaha financing Qard-hasan	FAB: Loans Income: Interest and similar returns
Istisna'a financing Bai Salam Bai Muajjal	FAB: Loans or Other accounts receivable/payable FAB: Loans or Other accounts receivable/payable Income: Interest and similar returns
Ijarah	Operating Ijarah: Production account: output and intermediate consumption Financing Ijarah: FAB: Loans Income: Interest and similar returns
Musharaka	FAB: Loan or Equity Income: Interest and similar returns or Dividends
Mudaraba Financing Tawarruq Bai bil Wafa Bai bil-Istighlal	FAB: Loans Income: Interest and similar returns
Ju'alah	FAB: Loans or Other accounts receivable/payable

Instrument	**Integrated framework of national accounts**
	Income: Interest and similar returns
Mushtarakah	FAB: Loans or Equity Income: Interest and similar returns or Dividends
Istijrar	FAB: Other accounts receivable/payable Income: Interest and similar returns

* FAB: Financial accounts and balance sheets

Chapter 27: Contracts, leases, licenses and permits

A. Introduction

27.1 Many transactions that take place in the economy and are recorded in the integrated framework of the national accounts are specified in terms of a contract between two institutional units. The majority of contracts are such that one unit provides a good, service or asset to the other unit for an agreed payment at an agreed time (possibly immediately after agreeing on the price). Such contracts may be written and legally binding or may be informal or even only implicit. If a unit accepts the estimate provided by a builder for the cost of specified work, the contract is written and may well be legally binding. If a book is ordered from a bookshop but there is a delay in delivery, there is an informal contract between the book shop and the customer but it is unlikely to be enforceable by either side. Whenever a customer asks how much a given service will cost, whether it is a haircut, the delivery of a heavy product or entry to a cinema, accepting the service at the quoted price is in effect an implicit contract. However, all these contracts are simply agreements about the terms under which goods, services and assets are provided to the customer along with the legal ownership of the item. The only extent to which these contracts feature in the integrated framework of the SNA is that they determine the time at which the transaction is to be recorded in the accounts. This is the time at which the ownership of the good, service or asset changes. For services, this is always when the service is delivered and for goods it may coincide with the time of delivery. However, the time of recording is never determined by the time when payment is made. Any difference between the time of payment and time of change of ownership gives rise to entries in the financial account under other accounts receivable/payable.

27.2 In addition to these informal and implicit contracts that underpin most transactions, there are also formal contracts and legal agreements variously described as leases and licences (or permits) where the terms of the agreement may affect the time of recording of transactions made under the agreement as well as the classification of payments and the ownership of the item subject to the agreement. The purpose of this chapter is to provide guidance on how transactions made under these more complex arrangements are to be recorded in the integrated framework of the SNA.

27.3 Section B considers the treatment and recording of operating and finance leases. Section C discusses the recording of rights to use natural resources and the different arrangements and considerations that are relevant. General considerations are presented first followed by a discussion of the treatments for different natural resources. Section D describes situations where assets can be considered to be shared including an explanation and example of the split-asset approach to recording natural resources. Section E discusses the relevant recording treatments for a range of other situations in which permission is granted to undertake specific activities, including the treatment of permits to use the environment as a sink. Sections F, G and H cover off on a number of smaller topics, namely contracts for future production, the situations in which leases can be considered assets and the treatment of time-share arrangements and lost deposits.

B. Leases

27.4 Three types of leases are recognized in the integrated framework of the SNA; operating leases, finance leases and resource leases. Each of these leases relates to the use of a non-financial asset. Fundamental to the distinction between the different sorts of leases is the difference between legal and economic ownership. This distinction is elaborated in chapter 4 on Flows, stocks and accounting rules. The legal owner of an asset is the institutional unit entitled in law and sustainable under the law to claim the economic benefits associated with the asset. By contrast, the economic owner of an asset is entitled to claim the economic benefits associated with the use of the asset in the course of an economic activity by virtue of accepting the associated risks. The legal owner is often the economic owner also. When they are different, the legal owner has divested itself of the risks in return for agreed payments from the economic owner. In this section, the treatment of operating and finance leases are described. Section C includes discussion of resource leases.

1. Operating leases

27.5 ***An operating lease is contract between a lessor and a lessee, under which the lessor charges a rental to the lessee for the use of a produced non-financial asset, and the lessor remains the legal and economic owner of the asset.*** One indicator of an operating lease is that it is the responsibility of the legal owner to provide any necessary repair and maintenance of the asset. Under an operating lease the asset remains on the balance sheet of the lessor.

27.6 The payments made under an operating lease are referred to as rentals and are recorded as payments for a service. The character of operating leases may most easily be described in relation to equipment since operating leases often concern vehicles, cranes, drills, etc. In general, though, any sort of non-financial asset, including intellectual property products, may be subject to an operating lease. The service provided by the lessor goes beyond the mere provision of the asset. It includes other elements such as convenience and security, which can be important from the user's point of view. In the case of equipment, the lessor, or owner of the equipment, normally maintains a stock of equipment in good working order that can be hired on demand or at short notice. The lessor must normally be a specialist in the operation of the equipment, a factor that may be important in the case of highly technical equipment, such as computers, where the lessee and its employees may not have the necessary expertise or facilities to service the equipment properly themselves. The lessor may also undertake to replace the equipment in the event of a serious or prolonged breakdown. In the case of a building, the lessor is responsible for the structural integrity of the building, so would be responsible in the case of damage due to a natural disaster, for example, and is usually responsible for ensuring that elevators, heating and ventilation systems function adequately.

27.7 Operating leasing developed originally to meet the needs of users who require certain types of equipment only intermittently. Many operating leases are still for short periods though the lessee may renew the rental when the period expires and the same user may hire the same piece of equipment on several occasions. However, with the evolution of increasingly complicated types of machinery, especially in the electronics field, the servicing and backup facilities provided by a lessor are important factors that may influence a user to rent. Other factors that may persuade users to rent over long periods rather than purchase are the consequences for the enterprise's balance sheet, cash flow or tax liability.

2. Finance leases

27.8 ***A finance lease is a contract between a lessor and a lessee, under which the lessor, as legal owner of an asset, substantially conveys the risks and rewards of ownership of the asset to the lessee. The lessee, therefore, becomes the economic owner of the asset. A finance lease involves imputing a loan.*** In return for conveying the risks and rewards of ownership, the lessor accepts another package of risks and rewards from the lessee. It is frequently the case that the lessor, though the legal owner of the asset, never takes physical delivery of the asset but consents to its delivery directly to the lessee. One indicator of a finance lease is that it is the responsibility of the economic owner to provide any necessary repair and maintenance of the asset. Under a finance lease, the legal owner is shown as issuing a loan to the lessee with which the lessee acquires the asset. Thereafter the asset is shown on the balance sheet of the lessee and not the lessor; the corresponding loan is shown as an asset of the lessor and a liability of the lessee. Payments under the finance lease are treated not as rentals but as the payment of interest and repayment of principal. If the lessor is a financial institution, part of the payment is also treated as a service charge (implicit financial services on loans and deposits).

27.9 Very often the nature of the asset subject to a finance lease may be quite distinct from the assets used by the lessor in their productive activity, for example a commercial airliner legally owned by a bank but leased to an airline. It would make no economic sense to show either the aircraft or its depreciation in the accounts of the bank or to omit them from the accounts of the airline. The device of a finance lease avoids this undesirable form of recording the ownership of the aircraft and the decline in its value while keeping the net worth of both parties correct throughout the length of the lease.

27.10 It is common for a finance lease to be for the whole of the life of the asset, but this need not necessarily be so. When the lease is for the whole of the life of the asset, the value of the imputed loan will correspond to the present value of the payments to be made under the lease agreement. This value will cover the cost of the

asset and include a service fee charged by the lessor. Payments made regularly to the lessor should be shown as a payment of interest a repayment of principal and a service fee. If the lessor is a financial institution, the interest payment should be partitioned to record a payment for implicit financial services on loans and deposits. If the terms of the agreement do not specify how these items are to be identified, the repayment of principal should correspond to the decline in the value of the asset (the depreciation), the interest payment to the net return to capital on the asset (including any implicit financial services on loans and deposits) and the service fee to the difference between the total amount payable and these two elements.

27.11 When the lease is for less than the whole life of the asset, the value of the loan should still be estimated as the value of the asset plus the value of the service charges to be made under the terms of the lease. At the end of the lease, the asset value will be equal to the value of the loan owed to the lessor at that time. At that point the asset could be returned to the lessor to cancel the loan or a new arrangement, including the outright purchase of the asset, may be reached between the lessor and lessee. Because a finance lease requires the lessee to acquire substantively all the risks and rewards associated with the asset, if the lease is for less than the expected life of the asset, the lease usually specifies the value to the lessor at the end of the lease or the terms under which the lease can be renewed. Any variation in the price of the asset from the value in the lease agreement is borne by the lessee.

27.12 From a conceptual point of view, the transfer of leased assets at the end of the lease period should be recorded as extinguishing the financial claim of the lessor (and the corresponding liability of the lessee). In practice however, it is considered appropriate to ignore the progressive recording of these financial claims, and to instead record the transfer of the relevant assets as capital transfers at the end of the lease period. In certain circumstances, however, particularly where there is a high degree of certainty that the asset will be transferred and where the value of that asset at the time of the transfer will be significant, a recording of building up a financial claim (and associated liability) should be preferably applied.

27.13 Although a finance lease will typically be for several years, the duration of the lease does not determine whether the lease is to be regarded as an operating or finance lease. In some cases, a large complex such as an airport or even a building may be leased for short periods, perhaps only one year at a time, but on condition that the lessee takes all responsibility for the asset, including all maintenance and cover for exceptional damage, for example. Even though the lease period is short, and even though the lessor may not be a financial institution, if the lessee must accept all the risks associated with the use of the asset in production as well as the rewards, the lease is treated as a finance and not an operating lease and the asset appears on the balance sheet of the lessee with a corresponding loan extended from the lessor to the lessee.

27.14 As a consequence, any corporation that specializes in this sort of leasing, even though it may be called a property company or aircraft leasing company, should be treated as a financial corporation offering loans to the units leasing assets from them. If the lessor is not a financial corporation, the payments are split into repayments of principal and interest only; if the lessor is a financial corporation, the interest is split into SNA interest and a service charge (implicit financial services on loans and deposits).

C. Rights to use a natural resource

27.15 In many countries, rights to use natural resources are issued by government since government claims ownership of the resources on behalf of the community at large. The following treatments are described using this general starting point, however, the same treatments apply if the resources are privately owned.

27.16 There are basically three different sets of conditions that may apply to the use of a natural resource. First, the legal owner may permit the resource to be used to extinction and thus transfers economic ownership of the natural resource to the user. Second, the legal owner can extend or withhold permission to continued use of the natural resource from one year to the next and thus retains economic ownership of the resource. Third, the legal owner may allow the natural resource to be used for an extended period of time in such a way that in effect the user controls the use of the resource during this time with little if any intervention from the legal owner. Under the third option the economic ownership of the natural resource is shared to the extent that both the user and the legal owner are entitled to future economic benefits from the use of the resource.

27.17 The first option results in recording the sale (or possibly an expropriation) of the natural resource, to reflect the associated change in economic ownership. This is recorded as a transaction in the capital account with

corresponding changes in the balance sheets of the two institutional sectors involved.

27.18 In the second option the relationship between the legal owner and the user is reflected in a resource lease. A resource lease is an agreement whereby the legal owner of a natural resource makes it available to a user in return for a regular payment recorded as property income and described as rent. Since economic ownership remains with the legal owner, the value of the natural resource continues to be recorded on the balance sheet of the legal owner to the extent that the balance of risks and rewards remains held by the legal owner. The classic case of a natural resource subject to a resource lease is land but other natural resources may also be treated in this way depending on the circumstances surrounding the rights to use the resource.

27.19 The third option involves partitioning the economic ownership by recording the creation of an asset for the user of the natural resource and an asset for the legal owner following the split-asset approach. The total value of these two assets is equal to the total value of the natural resource with the allocation of the total value between the user and the legal owner reflecting their respective shares of the future economic benefits to be earned from the use of the natural resource. Under the third option, depending on the nature of the agreement, regular payments of rent reflecting a share of the total resource rent are typically paid by the user to the legal owner.

27.20 Under all three options the total value of the natural resource should be recorded against the relevant class of natural resource, such as land or mineral and energy resources. The exception to this treatment concerns radio spectra which should be recorded following the treatment described in paragraphs 27.51 to 27.54. Further consideration of the recording of radio spectra is included in the 2025 SNA research agenda.

27.21 The difference in treatment between the three options for treating the rights to use natural resources depends on a range of criteria concerning the agreement established between the legal owner and the unit using the natural resource in production. The general criteria are presented first before describing how each of the three options relates to different types of natural resources.

27.22 There are six general criteria in distinguishing between the options.

a. *Costs and economic benefits assumed by user:* the more of the economic risks and benefits associated with the right to use an asset are incurred by the user, the more likely the classification of a transaction as the sale of an asset. Thus, pre-agreement on the value of payments (whether by lump sum or by instalments) effectively transfers all economic risks and benefits to the user and so point to the sale of an asset. If, on the other hand, the value of payment is made contingent on the results from use of the rights, economic risks and benefits are only partially transferred to the licensee and the situation is more readily characterized as a resource lease or split ownership. An additional indication of the degree to which commercial risks have been passed to the user is to examine the hypothetical case where a user goes bankrupt. If, in such a case, the legal owner reimburses none of the upfront payment made by the user, this would constitute a strong case for a characterization of the transaction as sale of an asset, as apparently the user has incurred all the commercial risks involved.

b. *Upfront payment or instalment:* as with other indicators, the mode of payment is in itself not conclusive for a characterization under one of the options. Generally, the means of paying for rights to use is a financial issue and as such not a relevant factor in determining the treatment. However, business practice shows that upfront payments of rent for long periods are highly unusual and this would then favour treating the rights to use as sale of an asset.

c. *Length of the contract:* rights granted for long periods suggest a treatment as the sale of an asset, while those granted for shorter periods suggest a treatment as a resource lease.

d. *Actual or de facto transferability:* the possibility to sell the rights is a strong indication of economic ownership and if transferability exists, this is considered a strong condition to characterize the establishment of rights as the sale of third-party property rights. In practice, rights are often transferable either directly (by the enterprise selling the rights to another enterprise) or indirectly (through the enterprise being acquired through a takeover).

e. *Cancellation possibility:* the stronger the restrictions on the issuer's capacity to cancel the rights at its discretion, the stronger the case for treatment as a sale of an asset. Conversely, when rights can easily be cancelled at the discretion of the legal owner, economic ownership over economic risks

and benefits has not been fully transferred to the user and the treatment qualifies more readily as a resource lease or split ownership.

f. *Conception in the business world and international accounting standards:* businesses, in accordance with international accounting standards, often treat a right to use natural resources as an asset. Again, in itself this does not require treatment as an asset in the national accounts, and there are other areas where companies choose to present figures in their accounts in ways that are not consistent with the integrated framework of national accounts. But the treatment of the acquisition of rights as capital investment in company accounts provides an added incentive to treat them in a similar way in the integrated framework, either as the sale of an asset or as split ownership.

27.23 Not all these criteria have to be satisfied to characterize a right to use as a sale of an asset nor does a simple majority of them being satisfied do so. However, in order to qualify as a resource lease, at least some of the following sorts of criteria should hold.

a. The contract is of *short-term duration,* or renegotiable at short-term intervals. Such contracts do not provide the user with an economic benefit when market prices for the resource go up in the way that a fixed, long-term contract would. Such economic benefits are holding gains that typically accrue to economic owners of assets.

b. The contract is *non-transferable.* Non-transferability is a strong but not a sufficient criterion for the treatment as resource leases, because, although such a contract precludes the user from benefitting from holding gains, it does not preclude the user from reaping economic benefits (for example, using the resource in their business).

c. The contract contains *detailed stipulations* on how the user should make use of the resource. Such stipulations are often seen in cases of use of land, in which the legal owner wishes to retain a control over the usage of the land. In other cases, examples of such stipulations would be that the contract states what regions or types of customers should be served, or that there are limits on the prices that the user may charge.

d. The contract includes conditions that give the legal owner the *unilateral right to terminate* the right to use without compensation, for instance for underuse of the natural resource by the user.

e. The contract requires *payments over the duration of the contract, rather than a large upfront payment.* Although this criterion is essentially financial in character and thus cannot be decisive on the treatment, it may indicate a degree of control for the legal owner to direct the use of the resource. The case for a treatment as a resource lease is further supported if the payments are related to the revenue the user derives from the rights to use.

27.24 These two sets of criteria reflect a more specific application of the distinction between economic and legal ownership as used in distinguishing between an operating and finance lease described above. Further, the criteria for treatment of the transactions are indicative rather than prescriptive. Once a decision on the appropriate treatment is made, further consideration of how to record the actual transactions will be needed, accepting that not all criteria pointing to a specific treatment may be met. For example, if on balance the decision is to treat the arrangement as a resource lease but a large upfront payment was made, this payment should, in principle, be treated as a prepayment to be recorded on an accrual basis. However, if the recipient is not willing to consider a refund if the contract is suspended, accrual recording is difficult. This is one reason why upfront payments are often indicative of the sale of an asset rather than a resource lease.

27.25 In line with the treatments of natural resources in Chapter 11 on Capital account, the application of these criteria to the main forms of natural resources is described below.

1. Land

27.26 Land may be sold outright when the legal ownership is transferred from one institutional unit to another. (Land may not be recorded as being sold to a non-resident unit. In such cases a notional resident unit is created that holds title to the land; the non-resident unit then owns the equity of the notional resident unit.)

27.27 Land is the natural resource most frequently subject to a resource lease. Tenant farmers usually pay regular

rent to their landlord. A right to use land may be considered as a sale of the land if the contract satisfies most or all of the considerations listed above for treatment as the sale of an asset. When the land is used in other circumstances, the payments are recorded as rent under a resource lease agreement and the value of the land is recorded on the balance sheet of the legal owner. For forest land the possibility exists to apply the split asset approach. The treatment of forest land is described further in paragraphs 27.33 to 27.36.

27.28 In some jurisdictions, the land under buildings remains in the legal ownership of a landlord other than the owner of the buildings. If regular payments are made to the landlord, these are recorded as rent. However, it is sometimes the case that, even though the land legally belongs to another unit, the right to occupy it for an extended period is paid for in a single upfront payment often when the building is acquired. As explained in the previous section, this suggests recording the payment as the sale of the asset. In such a case, when the building changes ownership, the purchase price includes an element representing the present value of future payments of rent. In such a case, the land is recorded in the integrated framework of the SNA as if the economic ownership of land is transferred along with the building above the land. If, at the end of the land lease, a further payment is liable for extension of the lease for another long-term period, this should be recorded as a transaction in land. In the accounts of the unit receiving the payment, the disposal of land is recorded with a concomitant other changes in the volume of land, to reflect the land coming into existence.

2. Mineral and energy resources

27.29 When a unit owning a mineral or energy resource cedes all rights over it to another unit, this constitutes the sale of the resource. Like land, mineral and energy resources can only be owned by resident units; if necessary a notional resident unit must be established to preserve this convention.

27.30 Most commonly, mineral and energy resources remain in the legal ownership of general government, with users extracting mineral or energy resources under an agreement where the payments made each year are dependent on the amount extracted. The payments (sometimes described as royalties) are recorded as rent. The full resource rent can be estimated using the residual value method, by deducting from output all costs related to the extraction of the resources, including capital services related to the use of non-financial assets in production as well as rents payable on the use of (rented) non-produced non-financial assets other than the natural resource itself. (For more details, see the annex to chapter 4 on Flows, stock and accounting rules). Rent paid on rights to use mineral and energy resources should be split between amounts paid in relation to non-renewable mineral and energy resources and renewable energy resources. Where possible, the rent paid on specific high revenue generating resources (e.g. copper, oil) should be recorded separately.

27.31 The legal owner (in many but not all circumstances a government) often does not appropriate the full resource rent which can be derived from the exploitation of mineral and energy resources, and the resource in question may generate a future stream of resource rents beyond the payments of rent to the legal owner. In these cases, the unit having the rights to exploit the resource thus appropriates part of the resource rents. In these cases, the value of the resources in question is split between the legal owner and the unit exploiting the resources applying the split-asset approach; see also paragraphs 14.56 to 14.58. An example of this is provided in Section D below.

27.32 The generation of income from renewable energy resources does not require the extraction of minerals or energy resources, but rather the construction and operation of produced assets which capture the energy from the renewable source. In this context, the relevant permissions to construct and operate the produced assets are directly associated with the location of the produced assets and the economic owner of the renewable energy resources must secure the permissions before construction and operation. Payments for permission may be made in relation to (i) access to land from land holders; or (ii) government permissions. In the first case, payments should be treated as either payments of rent or as the sale of an asset in line with the treatments for payments related to land (see paragraphs 27.26 to 27.28). In the second case, the resource rent on renewable energy resources is not affected and payments for the permissions will be treated as either payments of rent or involve the application of the split-asset approach to the renewable energy resources depending on the nature of the arrangements.

3. Timber resources

27.33 Timber resources are a type of biological resource that are valued in terms of the expected harvest of timber. Most commonly, timber resources are present in areas of forest land but the harvesting of timber, and hence the stock of timber resources, can occur in other areas of land, in particular agricultural land, for example through agro-forestry production systems. A clear distinction must be made between the value of timber resources and the value of the land, especially forest land, on which the stock of timber grows. By convention, the value of timber resources is measured in relation to the current work-in-progress value of the stock of timber (both mature and immature trees that are expected to be harvested), while the value of forest and other land incorporates the value of future economic benefits from the harvesting of timber.

27.34 If a unit is given permission to clear fell an area of forest land, or to fell at its discretion without any restriction in perpetuity, the payments made to the legal owner constitute the sale of an asset and economic ownership is transferred to the purchaser. The sale should be recorded as the sale of the timber resources and the forest land separately, where the value of the timber resources reflects the work-in-progress value of the current stock of timber, and the value of forest land reflects the value of future economic benefits from harvesting timber after deduction of the work-in-progress. In some countries, sales of standing timber (i.e., the current stock of timber) are common where the owner of forest land manages the growth of trees but sells the stock of timber resources ahead of harvest with the purchaser taking on the task of felling the trees and selling the harvested timber. These transactions may provide a measure of the value of work-in-progress of the timber resources.

27.35 The option to have a lease that allows harvesting at the lessee's discretion but subject to the restoration of the land, in an acceptable forested state, at some time in the future is improbable. It is more common for timber harvesting to be allowed under strict limits with a fee payable per unit volume of timber felled (sometimes referred to as a stumpage fee). These payments to the legal owner are recorded as rent and reflect a payment for use of the forest or other land on which the timber resources grow. Where the resource rent from harvesting timber is greater than the payments of rent, the total value of the forest land should be partitioned following the split-asset approach.

27.36 Illegal and unregulated logging is prevalent in some countries. In such cases, and providing the activity is of a sufficiently large size and has an ongoing nature, entries to recognise additional economic asset value can be recorded. Specifically, entries will be required to show the uncompensated seizure of both timber resources and forest land by the extractor. In addition, if the logging activity relates to a forest not available for timber production, such as in a national park, entries will be required to show the economic appearance of the additional values of timber resources and forest land. Any depletion of the forest land attributable to the logging should be recorded against the extractor.

4. Fish

27.37 Natural stocks of fish with an economic value are assets (i.e., biological resources yielding once-only products) and the same considerations apply to them as to other natural resources. Generally, the water bodies in which fish are caught are under the administration or management of economic units (usually government) that are not the same units as those catching the fish. Consequently, the government may be considered the legal owner of the fish. This would include for example fish stocks within the exclusive economic zone (EEZ) of a country. Alternatively, access to specific stocks of fish (e.g., tuna) may be "managed" (again by government) using quotas and other techniques to control the extent of the catch, in which case again the government may be considered the legal owner. Where there is evidence of management, a total value of the fish stock can be calculated as the present value of the future resource rents estimated using the residual value method.

27.38 In cases where there is no effective management of the fish stock or an associated water body, then there is no legal owner and consequently no asset is recorded on the balance sheet notwithstanding the resource rent that may be earned by the fishing industry. This treatment is consistent with economic theory where the resource rent in open access fishery contexts will tend to zero and hence there would be no value of the stock to record in the balance sheets of the integrated framework of the SNA.

27.39 Depending on the organizational arrangements different accounting entries will be required. In some cases,

the unit undertaking the fishing activity may be required to pay an annual fee to the legal owner. These payments should be recorded as rent. Where the resource rent is greater than this payment then a partitioning of the value of the fish stock can be made following the split asset approach.

27.40 In other cases, the legal owner may issue fishing quotas in perpetuity or for extended periods to particular institutional units, for example, to households in communities where fishing is an established way of life and there may be little alternative economic employment. If the quotas are issued in perpetuity, either free of charge or for a fee, this is treated as the sale of an asset and the entire value of the fish stock is attributed to the holder of the quota (assuming that the holder is also undertaking the fishing activity). The difference between the sale price (potentially zero) and the full value of the fish stock based on future resource rents should be recorded as the appearance of an asset in the other changes in the volume of assets and liabilities account.

27.41 If quotas are issued for a certain period of time and have an associated price (perhaps established using an auction), then the value of the fish stock should be partitioned using the split-asset approach where the amount paid for the quota reflects the share of the value of the fish stock attributable to the legal owner (i.e. the unit issuing/selling the quota) and the remaining part of the present value of the future resource rents is attributed to the quota holder. Depending on the quota pricing arrangements, the price (e.g., the auction price) may represent a good approximation of the present value at the time of the transaction noting the need for re-assessment of the value in future periods.

27.42 Payments made in relation to the quota are treated as payments of rent. If these payments are annual, then no additional consideration is required. However, if a payment relates to more than one year, then entries in the financial account will be required to reflect the prepayment of rent as part of accounts payable/receivable.

27.43 If the quotas, after issuance or sale, can be transferred by the original holder, then a market in quotas may be established. Although they have a market value, these quotas do not have additional or separate value beyond the total value of the fish stock as measured using the present value of the future resource rents. In concept, there should be a good alignment between the value of marketed quotas and the value of the fish stock.

27.44 In the event that the quota is held by an economic unit other than the unit undertaking the fishing activity, then the total value of the fish stock should be partitioned using the split asset approach with the share attributable to the quota holder equal to the market value of the quota and the remaining value attributable to the unit undertaking the fishing activity.

27.45 It is not realistic to consider that permission would be given to exhaust fish stocks, but illegal and unregulated fishing may either reduce the stock below the point of sustainability or exhaust them altogether. In these cases, and providing the activity is of a sufficiently large size and has an ongoing nature, entries to recognise additional economic asset value can be recorded. Specifically, entries will be required to show the economic appearance of the additional value of fish resources (generally in the accounts of the government) and to show the uncompensated seizure of fish resources by the extractor. Any depletion of the fish resources attributable to the fishing activity should be recorded against the extractor. Where the illegal or unregulated fishing is small in scale no changes in stock are recorded.

27.46 It is common for a country's fish stocks to be harvested by non-resident economic units, for example, fishing in an exclusive economic zone (EEZ). By convention, the output associated with the harvest of these resources is allocated to the country of residence of the operator of the vessel undertaking the fishing rather than to the country in which the resources are located. While in principle depletion would be recorded against the production of the non-resident unit, there is currently no agreed treatment for the recording of these flows in the integrated framework of national accounts or balance of payments. Thus, an exception is made such that no depletion is recorded in the accounts of the non-resident extractor. Where the fishing is managed, for example under quota arrangements, then following the treatments outlined above, the manager of the resource, commonly the government, may receive payments of rent and consequently have a share of the value of the fish resources on its balance sheet. An associated entry for depletion should also be recorded as appropriate in the other changes in volume of assets and liabilities account. The issue of recording production, depletion and associated entries relating to these situations has been put on the research agenda of the 2025 SNA. In addition, *Measuring natural resources in the national accounts: a compilation guide (forthcoming)* provides a discussion on approaches to estimation.

27.47 A licence for recreational fishing has long been considered, by convention, as payment of a tax (see paragraph

9.66). This treatment is not changed by the wider considerations for commercial fishing.

5. Water

27.48 A body of water with an economic value can be sold in its entirety either as part of the land that surrounds it or as a separate item.

27.49 It is unlikely that economic ownership would be ceded under a long lease with no preconditions on the quantity and state in which a similar amount of water should be available to the legal owner in which case payments would generally be treated as rent. However, it is possible that surface water could be leased under a long lease, for example, for recreational purposes. The treatment of such leases should be as for land.

27.50 Concerning the extraction of water from water bodies, regular payments to the legal owner for the right to abstract water (as opposed to payments for the delivery or supply of water) should be treated as rent.

6. Radio spectra

27.51 Payment for a mobile phone licence constitutes the sale of an asset, not payment for rent, when the licensee acquires effective economic ownership rights over the use of the spectrum. To decide whether ownership is effectively transferred or not, the criteria quoted above are to be considered.

27.52 When sale of an asset applies and the life span of the licence and of the spectrum coincide, for example when licences are granted indefinitely, the payment for a licence is treated as the sale of the spectrum itself.

27.53 When sale of an asset applies, and when the life span of the licence is different from the life span of the spectrum, the payment for a licence is treated as the sale of a permit to use a natural resource by the legal owner (licensor) to the economic owner (licensee).

27.54 When the licence agreement is treated as the sale of an asset in its own right, its value is established at the time of its sale. It declines with the expiration of the period of validity to fall to a value of zero at the point of the expiry of the licence. Symmetrically, the value of the spectrum to the lessor falls when the licence acquires a value and is progressively re-established as the licence expires. This is consistent with a potential further sale of the right to use the spectrum for another period. This procedure also ensures a neutral effect on the net worth of the overall economy during the life of the licence.

D. Sharing assets

27.55 There are two ways in which assets may be shared. The asset may be wholly owned by two or more units, each at different points in time through successive purchases or transfers. Alternatively, the economic risks of and benefits from the asset may be shared by two or more units at a single point in time. The two cases require different treatments.

27.56 Within the integrated framework of the SNA, even though the asset may be owned by different units at different times, when a balance sheet is drawn up, in most cases the whole of the value of the asset is attributed to one unit. (The exceptions relate to unincorporated joint ventures and split assets for certain natural resources, which are discussed below.) For an asset subject to an operating lease, there is no ambiguity. The legal owner is also the economic owner and is the unit that shows the asset on its balance sheet. For an asset subject to a finance lease, the unit showing the asset on its balance sheet is the economic owner. The value of the asset is the present value of the future payments due to the legal owner plus the value of the asset at the end of the lease as specified in the lease agreement. This is consistent with the view that the value of the asset represents the stream of future economic benefits coming from the asset and the economic owner is the unit entitled to receive these benefits in return for accepting the risks associated with using the asset in production.

27.57 Regarding the use of assets, the most common occurrence is that a single unit undertakes the activity in which the asset is used and that unit shares the returns among the owners in the form of distributed property income. However, occasionally it is possible such a single unit does not exist and it is not meaningful to try to create

it statistically. This is most common when the participating units are resident in different economies, as may be the case with an airline, or in the case of some unincorporated joint ventures (UJVs). The terms under which UJVs are established are diverse but one form allows that all members share the assets equally. In such cases, the integrated framework of the SNA records the assets shared between the owners in proportion to their ownership shares.

27.58 In some joint ventures, one party may contribute an asset as its share of the costs. If this happens, an injection of capital equal to the value of the asset should be recorded followed by the purchase of the asset in question with the ownership of the asset then shared by all parties to the arrangement.

27.59 In relation to the use of natural resources, as described in section C above, there will be instances where the future stream of economic benefits in the form of resource rents are shared between the legal owner and the extractor of the resources. The recording in these situations should follow the split-asset approach as discussed above, in chapter 4 on Flows, stocks and accounting rules and in chapter 11 on Capital account.

27.60 To illustrate the split-asset approach the following example is provided. It shows the range of entries that are associated with a full implementation of the approach, including accounting for depletion as a cost of production for the extractor and allocation of depletion in line with the shares of resource rent generated by the extraction of natural resources. Note that the full value of depletion is recorded as a cost of production for the extractor in the production account before subsequent allocation in the remaining sequence of economic accounts.

27.61 In this example, the production account of the extractor records output of 110 and costs of intermediate consumption (10), remuneration of employees (35) and depreciation of fixed assets (30) resulting in gross operating surplus of 70 with resource rent equal to 24. Rent on natural resources of 18 is paid by the extractor to the government as recorded in the allocation of earned income account. Thus, the share of resource rent paid to government is 75%. Total depletion of the natural resource is estimated at 20 of which 15 (i.e., 75%) is considered to be borne by the legal owner, in this case government. In the capital accounts of the extractor, depreciation (30) and the remaining share of depletion (5) are added to net saving (17) to derive net lending of 52. For government, the depletion of natural resources (15) and net saving of 3 results in a net lending of 18.

27.62 In terms of changes in the balance sheet, as noted above it is assumed that the resource rent (24) from exploiting the natural resources (valued at 800 at the beginning of the period) are split between government (18) and the extractor (6). Effectively, this means that government is foregoing 25% of the future returns from the natural resources. The latter is recorded, in the accounts of the legal owner (government), as a negative other change in volume of natural resources with a value of (minus) 200. This recording follows economic reality, with government foregoing part of the future resource rents. Even though governments may receive a steady flow of future income, if it only represents part of the potential economic benefits from the natural resources, then the recording of a reduction in balance sheet value makes evident that government is redistributing wealth. The closing balance sheet values of the natural resource in each of the accounts reflects the combination of the other change in volume of natural resources (negative for government and positive for the extractor) and depletion, such that the total value of the resource at closing is equal to the opening stock value less depletion (i.e., 800 – 20 = 780).

Table 27.1: Entries for the split-asset approach

Accounts for the extractor of natural resources

Production and generation of earned income account

Intermediate consumption	10	Output	110
Remuneration of employees	30		
Gross operating surplus	70		
Depreciation	30		
Depletion	20		
Net operating surplus	20		

Allocation of earned income account

		Net operating surplus	20
Rent	18		
Depletion borne by the legal owner	-15		
Net saving	17		

Capital account

Acquistion of assets	0	Net saving	17
Depreciation	-30	Net capital transfers received	0
Depletion	-5		
Net lending/borrowing	52	Changes in NW due to saving and CT	17

Financial account

Cash	52	Net lending/net borrowing	52

Other changes in the volume of assets and liabilities account

		(Dis) appearance or other change n.e.c.	200
		Changes in NW due to other changes in assets	200

Balance sheet

Cash	0	52	Net worth	200	417
Fixed assets	200	170			
Natural resources	0	195			
Total	200	417	Total	200	417

Accounts for the government

Production and generation of earned income account

Remuneration of employees	0	Output	0
Depreciation	0		
Net operating surplus	0		

Allocation of earned income account

		Net operating surplus	0
		Rent	18
		Depletion borne by the legal owner	-15
Net saving	3		

Capital account

Acquistion of assets	0	Net saving	3
Depreciation	0	Net capital transfers received	0
Depletion	-15		
Net lending/borrowing	18	Changes in NW due to saving and CT	3

Financial account

Cash	18	Net lending/net borrowing	18

Other changes in the volume of assets and liabilities account

		(Dis) appearance or other change n.e.c.	-200
		Changes in NW due to other changes in assets	-200

Balance sheet

Cash	0	18	Net worth	800	603
Fixed assets	0	0			
Natural resources	800	585			
Total	800	603	Total	800	603

E. Permission to undertake a specific activity

27.63 Permission may be granted to engage in a particular activity, quite independently of any assets involved in the activity. Thus rights to extract minerals in return for the payment of rent, for example, is not covered by this type of permission. Permissions are not dependent on a qualifying criterion (such as passing an examination to qualify for permission to drive a car) but are designed to limit the number of individual units entitled to engage in the activity. Such permissions, often in the form of permits or licences, may be issued by government or by private institutional units and different treatments apply to the two cases. In general however, it is noted that the accounting entries should follow the treatment explained in paragraphs 13.33 to 13.35 concerning the initiation and cancellation of contracts, leases and licences.

1. Permissions issued by government

27.64 When governments restrict the number of cars entitled to operate as taxis or limit the number of casinos permitted by issuing licences, for example, they are in effect creating monopoly profits for the approved operators and recovering some of the profits as the fee. In the integrated framework of the SNA these fees are recorded as taxes, specifically as other taxes on production. This principle applies to all cases where government issues permissions to limit the number of units operating in a particular field where the limit is fixed arbitrarily and is not dependent only on qualifying criteria.

27.65 In principle, if the permission is valid for several years, the payment should be recorded on an accrual basis with an other account receivable/payable entry for the amount of the payment covering future years. However, if government does not recognize a liability to repay the user in the case of a cancellation, the whole of the fee payable is recorded at the time it is paid.

27.66 The incentive to acquire such a permission is that the user believes that they will thereby acquire the right to make monopoly profits at least equal to the amount paid for the permission. This stream of future income is treated as an asset if the user can realize this by on-selling the rights. The type of asset is described as a permit to undertake a specific activity. The value of the asset is determined by the value at which it can be sold or, if no such figure is available, is estimated as the present value of the future stream of monopoly profits. If the payment for the permission is being recorded by government on an accrual basis, the user has an asset in the balance sheet under accounts receivable/payable equal to the value of the future payments and so the value of the permission itself should cover simply the excess of the monopoly profits over the cost. If the permission is on-sold, the new owner assumes the right to receive a refund from the government if the permission is cancelled as well as the right to earn the monopoly profits. If the permission was recorded as a single tax payment, the value of the asset is determined by the value at which it can be sold or, if no such figure is available, is estimated as the value of all the future monopoly profits without deduction. The first appearance of the asset, as well as the changes in value over time, are recorded in the other changes in the volume of assets and liabilities account.

An example

27.67 Suppose a unit, A, contracts with government to buy a permit to operate a casino for 3 years at a total cost of 12. The unit expects to make monopoly profits of 7 per year because the permit excludes many other casinos from operating. The government may or may not be prepared to make a refund if A relinquishes the permit. A may utilize the permit for the whole of the 3 years for which it is valid or may sell it to unit B at the end of year 1. The recordings under these four possibilities are examined below.

Case 1: Government does not offer a refund and A keeps the permit for 3 years

27.68 At the start of year 1, A pays tax of 12 and has an asset worth 21 initially. By the end of the year, the value of the asset has reduced by 7 as an other volume change, because one of the three years for which the permit was initially valid has expired. At this point the asset is contributing 14 to A's net worth. By the end of the

second year A writes off another 7 as an other volume change, leaving a contribution to net worth of 7. By the end of the third year the asset is worth zero.

Case 2: Government does not offer a refund and A sells the permit to B after one year

27.69 At the start of year 1, A pays tax of 12 and has an asset worth 21 initially. By the end of the year the value of the asset has reduced by 7 as an other volume change, because one of the three years for which the permit was initially valid has expired. At this point A values the asset at 14. However, B is only prepared to pay 13 for the asset and A accepts this. A therefore reduces the value of the asset by 1 as a revaluation change. B then acquires the asset and reduces its value by 6.5 in the other change in volume of assets account in each of the two following years.

Case 3: Government does offer a refund and A keeps the permit for 3 years

27.70 At the start of year 1, A makes a payment of 12 to government but this is recorded as a payment of tax of 4 during the year and at the end of the year government has an account payable to A of 8. The value of the permit to A is only the excess of the monopoly profit over the total amount that A will have to pay to government. This starts at 9 (the difference between 7 and 4 for three years) but by the end of year 1 is worth only 6. At the end of the year A's net worth includes an account receivable from government of 8 and 6 as the remaining value of the permit. The total is 14 as in case 1. During the second year, A's account receivable from government is reduced by 4 which is used to pay the tax due in year 2. In that year the value of the permit also reduced by 3 from 6 to 3. At the end of the year, A's net worth includes an account payable from government of 4 and a permit worth 3, total 7 as in case 1. At the end of year 3, both the account payable and the value of the permit are reduced to zero.

Case 4: Government does offer a refund and A sells the permit to B after one year

27.71 At the start of year 1, A makes a payment of 12 to government but this is recorded as a payment of tax of 4 during the year and at the end of the year government has an account payable to A of 8. The value of the permit to A is only the excess of the monopoly profit over the account payable. This starts at 9 (the difference between 7 and 4 for three years) but by the end of the year is worth only 6. At the end of the year A's net worth includes an account receivable from government of 8 and 6 as the remaining value of the permit. The total is 14 as in case 1. As in case 2, A has to reduce the value of the permit (in this case from 6 to 5) when A appears to sell the asset to B for 13. In fact, the account payable from government of 8 is transferred to B and the asset is sold for 5. B's net worth is unchanged. B has paid A 13 but received the account payable of 8 and an asset valued at 5 in return. In year 2, the account payable is reduced by 4 and a tax payment of 4 is recorded and the permit declines in value from 5 to 2.5.

Government permissions as assets

27.72 A permission issued by government to undertake a specific activity may be treated as an asset by the holder of the permission only when all the following conditions are satisfied:

a. The activity concerned does not utilize an asset belonging to government;

b. The permission is not issued subject to a qualifying criterion; payments for such permissions are treated as taxes;

c. The number of permissions is limited and so allows the holder to make monopoly profits when undertaking the activity concerned;

d. The holder must be legally and practically able to sell the permission to a third party.

27.73 In practice, if the permissions are not on-sold it is not relevant to record the permissions as assets, even if all of these conditions are satisfied. If any of the conditions is not satisfied, the payments are treated as taxes

without the creation of an asset in the category of contracts, leases and licences. (There may be an account payable as shown in cases 3 and 4 of the example.)

2. Permissions issued by other units

27.74 It is less common for units other than government to be able to limit the participation in a given activity. One instance may be when it is either compulsory or desirable to belong to a professional association but in this case there is seldom a limit on numbers participating. Another example could be where the owner of property limits the numbers of units allowed to operate on the property for example a hotel with a policy of only allowing one taxi firm to pick up guests. In these sorts of cases, any related payments are treated as payments for services. In principle the payment should be recorded on an accrual basis throughout the period for which the permission is valid. There is no reason in principle why such permissions could not be treated as assets if they were marketable though this may not be a common situation.

Non-government permissions as assets

27.75 A permission issued by a unit other than government to undertake a specific activity may be treated as an asset by the holder of the permission only when all the following conditions are satisfied:

a. The activity concerned does not utilize an asset belonging to the permission-issuer; if it does the permission to use the asset is treated as an operating lease, a finance lease or a resource lease;

b. The number of permissions is limited and so allows the holder to make monopoly profits when undertaking the activity concerned;

c. The holder must be legally and practically able to sell the permission to a third party.

27.76 In practice, if the permissions are not on-sold it is not relevant to record the permissions as assets, even if all of these conditions are satisfied. If any of the conditions is not satisfied, the payments are recorded as payments for a service.

3. Permissions to use the environment as a sink

27.77 Governments are increasingly issuing emission permits as a means of controlling total emissions. An emissions permit (cap-and-trade) system is a flexible market mechanism that establishes a maximum level of pollution – a cap. Companies must have a permit to cover each unit of pollution they produce. Each permit stipulates the amount of emissions, for example greenhouse gases) that can be emitted (the quota). As such, each company must have a permit with a sufficient quota of units of emissions to cover their needs.

27.78 In the initial stages of some cap-and-trade schemes, permits are given to non-financial corporations freely. As a result, firms do not incur any additional production costs, unless they exceed their quota and are required to purchase additional permits from others. Increasingly, however, governments are auctioning permits rather than giving them freely. In these auctions, the purchase of a permit is not restricted to the emitting unit – permits can be purchased by any market participant – individuals, investors, governments, non-profit institutions, financial and non-financial companies.

27.79 Nonetheless, the schemes are structured primarily for non-financial corporations, who are most likely to emit. If companies exceed their quota of emissions, they can purchase unused permits from others, adjust their production or in the longer-term, install technology that reduces emissions. Depending on the adaptability of firms' production functions, some firms will be able to adjust to the limits more easily than others.

27.80 The recommended approach for recording emission permit systems in the integrated framework of the SNA is to record the issuing of the emissions permit as a financial asset/liability valued at the auction price. Thus, the issuance of permits is regarded as the purchase of a financial asset – accounts receivable/payable – where the payment grants the acquirer the right to emit a pre-specified quantity of emissions sometime in the future. This approach aligns with the recording of permits in company financial statements where the emitting corporation incurs an expense at the time of surrender of the permit, which impacts their net

lending/borrowing. In the treatment of the integrated framework, when the company surrenders the permit, it is recorded as taxes on production. Any change in price from the issuance date is "written off" in the revaluation account each time there is a transaction. This ensures that the flow of taxes will always reflect the original issuing price and not the current exchange value of the permit which could include holding gains or losses.

27.81 Emission permits provided freely to corporations do not have an associated tax cashflow. If taxes are maintained at issuance price (i.e., at zero), this implies that freely provided emission permits have zero value. In so doing, emission permits auctioned or provided freely will follow the actual cash revenue received by governments. However, the exchange value of emission permits (including freely provided ones) is clearly not zero. When emission permits are transacted amongst corporations, domestically or with non-residents, they should be recorded in the accounts. If a corporation exceeds its quota and requires additional permits, it will purchase them from the market, some of which could have been initially provided freely. Although there are good arguments that could be considered for emission permits issued freely to be assigned a value, it may be difficult to consistently assign values and countries may need to resort to imputations. Given the complexity, conceptual and practical difficulties, and notwithstanding the need for imputations, compilers should preferably not record any asset/liability for freely issued emission permits, and instead revalue them back to zero every time there is a transaction with an emission permit that was freely issued.

27.82 It is important for users to be able to easily identify all transactions of emission permits in the accounts. In order for emission permits to be visible, it is recommended that a separate classification for emission permits be assigned that aligns with the new classifications of flows and stocks.

27.83 Methodologies and assumptions are needed to allow for time of recording, valuation, and other adjustments. It is assumed that the time the emission permit is surrendered corresponds to the time that emissions occurred. This assumption implies that the payments for emission permits issued by the government in year t will be recorded as tax revenue in year t+n, i.e., the year the emission permit is surrendered. Adjustments are also needed to align corporate expenses reported in business accounts with government revenue and to record cross-border transactions and stocks in relation to international or multi-country permit schemes/arrangements, such as the European Union Emission Trading Scheme (EU ETS).

27.84 To illustrate these concepts the following numerical example is provided. The starting point for the numerical example is that corporation A and corporation B have liquid assets (currency) of 1,000 and 1,500, respectively. The government then issues 100 emission permits at a price of 10 each. The recording of the purchase of these permits by corporation A is rather straightforward. Government receives cash of 1,000 with the equivalent increase of liabilities (other accounts receivable/payable) representing the prepaid taxes on production, while corporation A pays 1,000 in cash with a concomitant increase in claims towards the government.

27.85 Next corporation A sells the permits to corporation B at a price of 15 for each permit. To arrive at an appropriate recording, the claims are first revalued from 1,000 (= 100 * 10) to 1,500 (= 100 * 15), after which the claims are sold at the agreed exchange price, in exchange for cash, to corporation B. At this point the value of the financial claims of the government differs from the value of the corresponding claims in the books of corporation B. Since the treatment is that the value in the government accounts does not change (consistent with the surrender of the permits being recorded at issuance prices at a later moment in time), the claims in the books of corporation B need to be revalued downwards. In the last stage of the example, half of the permits are surrendered, to be recorded as taxes on production with a counterpart decrease in the value of the financial claims.

27.86 It is noted that where emissions concern emissions to the atmosphere, an alternative recording may be envisaged if the atmosphere itself would be treated as an asset (which is not the case in the integrated framework of the SNA). The research agenda of the 2025 SNA includes further consideration of the treatment of the atmosphere as an asset and, depending on the outcomes of that research, the treatment of emission permits may be revisited.

27.87 Governments may also issue permissions to use the environment as sink without the use of trading schemes as described above. Payments may be made for these permissions. To describe the different ways of treating the payments, the case of payments for discharging water may be considered as an example. Four alternatives are possible:

- If a payment to discharge water is a fine intended to inhibit discharge, it should be treated as a fine.
- If a limited number of permits is issued with the intent to restrict discharges, the payment should be treated as a tax if the medium into which the water is discharged is not regarded as an asset in the integrated framework of the SNA.
- If the discharge medium is an asset and the necessary conditions are met concerning the terms on which the discharge is permitted, then the payment for the permit should be treated in the same way as the payment for a licence to use the radio spectrum for mobile phones.
- If the payment is linked to remedial action, then it is treated as a tax.

F. Contracts for future production

27.88 Although human capital is not recognized as an asset in the integrated framework of the SNA, there are cases where a contract that entitles the holder to limit the ability of a named individual to work for others may be regarded as an asset. The most prolific and lucrative contracts may be for sports players where, for example, a football club can "sell" a player to another. In fact they are not selling the person, they are selling the exclusive right to have that person work for them. Similar contracts exist for the rights to publish literary works or musical performances. All such contracts are treated as assets of the type entitlement to goods and services on an exclusive basis within the asset class of contracts, leases and licences.

27.89 It is possible to imagine that similar contracts may exist for the production of goods in future. For example, airlines may purchase the option to buy future aircraft production. However, if there is no transferable asset and a change of mind on the part of the potential purchaser or failure to deliver on the part of the supplier is settled by a change in the arrangements between the two parties, it does not lead to the sale of an option to a third party and hence no asset is created. Nonetheless, if an instance arises where the option to purchase goods is treated in the same way as a contract for a named individual's performance, the same treatment would apply.

G. Leases as assets

27.90 As stated at the beginning of this chapter, contracts underlie many transactions recorded in the integrated framework of the SNA and it is important to understand the implications for the time of recording and classification of transactions arising from a contract. It has been noted that permits or licences to use natural resources may constitute an asset as may permits to undertake specific activities and contracts for future production. There is one other condition that may lead to a contract being considered as an asset, which is another circumstance when the contract is transferable to a third party (that is, a unit other than the two specified in the original contract).

27.91 Suppose a lease on an apartment agreed some time ago specifies the rental at 100 per month but if the same apartment were to be leased currently it would fetch 120 per month. From the lessor's point of view, the apartment is "encumbered" by the existing lease, that is, it carries a penalty (in this case of 20 per month) because of the existence of the lease. The encumbered value of the apartment is based on the present value of future rental payments taking the existence of the lease into account, that is, the future income stream is 100 for as long as the lease lasts and 120 thereafter (ignoring any allowance for inflation). The unencumbered value of the apartment is a present value based on an income stream of 120 per month from the current period forward. The value to be entered in the landlord's balance sheet is the encumbered value. If he wishes to sell the apartment and the existing tenant had the right to remain at the agreed rental, the encumbered value is all the landlord (lessor) could hope to realize. If he wished to realize the unencumbered value he would have to pay the tenant the difference between the unencumbered value and the encumbered value to be free of the lease. This amount, the encumbrance, can in some circumstances be treated as an asset of the tenant. The circumstances are that it is both legally possible and is practicable for the tenant to sublet the apartment to a third party. Because of the difficulty of identifying when such assets may exist, it is recommended that in practice these assets be recorded only when there is evidence that they have been realized.

27.92 It is possible that the encumbered value of the apartment may be higher than the unencumbered value if

rentals have fallen since the lease was agreed. In this case it is the landlord that benefits from the discrepancy between the contract price and the market price because the value of the apartment in the balance sheet is still the encumbered value. If the tenant wishes to cancel the lease, they may have to pay the landlord the difference between the encumbered value and the unencumbered value. Only in the exceptional case where the tenant pays a third party to assume the lease at the price specified in the lease, does this payment represent realizing an asset of negative value to the tenant. Once the lease expires or is cancelled, the value of the apartment returns to its unencumbered value.

27.93 Assets reflecting such third-party property rights are always transitory. They exist only for the length of the lease and where there is a difference between the encumbered and unencumbered values. As each year passes, they reduce in value because the period during which the difference exists is reduced but may increase if the new rental price increases.

27.94 The exchange price of the rental of an apartment is the price actually paid by the existing tenant. If, in this example, the original tenant remains in situ and pays 100 per month, this is the exchange price despite the fact that a new lease would fetch a rental of 120. Only if the original tenant sublets the apartment for 120 would the exchange price be recorded as 120. Of this, 100 will be paid to the landlord and 20 to the original tenant.

27.95 The example above shows when a marketable operating lease may acquire a value as an asset. Contracts for future production may also give rise to these sorts of third-party property rights assets. So may permits to undertake specific activities even though the original payment was treated as a tax if payable to government. Finance leases do not give rise to these sorts of assets. If the value of the asset being leased increases by more than the payments due under the finance lease, the lessee always has the option of selling the asset, repaying the loan and keeping the difference.

27.96 A marketable operating lease may be treated as an asset only when the two following conditions are satisfied:

a. The lease specifies a predetermined price for the use of an asset that differs from the price the asset could be leased for at the current time, and

b. The lessee is able legally and practically to realize this price difference by subcontracting the lease to a third party.

27.97 In practice, it is recommended that such assets should be recorded only when the lessee does actually exercise their right to realize the price difference.

H. Other considerations

1. Time-share arrangements

27.98 One way of sharing an asset offering accommodation is by means of a “time-share” arrangement. The same expression, though, may be used for a number of different arrangements.

27.99 One arrangement is similar to purchasing a house except that “ownership” is restricted to a particular period each year but in perpetuity. Exactly the same physical space is available to the owner each year. Another arrangement guarantees accommodation at a given time each year but not necessarily in the same physical space. Other arrangements consist of buying “points” in a scheme that the owner can use to purchase accommodation at different locations and times subject to availability.

27.100 All time-share arrangements have a unit that is responsible for upkeep, maintenance, insurance and so on but there are variations in whether this unit is the ultimate owner of the complex and the subscribers are lessees or whether the unit acts as agent for the group of owners or subscribers. Similarly there are variations in whether the owner or subscriber may sell or bequeath their ownership to another unit permanently and whether they can sublet occasionally.

27.101 The issue of whether participation in the time-share scheme gives rise to an asset will depend on the answers to these sorts of questions. If the owner has a nominated space, available in perpetuity, is eligible to act as part of the management committee for the scheme, can sell or bequeath the allocation at will, then the holding is most likely to be an asset of the same type as a house. If the owner has a fixed agreement to have some

form of accommodation available at a given period for a fixed length of time, it is likely that this represents a prepaid lease but one that could be sublet occasionally or sold for the rest of the period of the lease as a transferable operating lease. A participant in a points-based scheme may have only an account receivable by way of an asset.

27.102 Where time-share arrangements are significant, the conditions pertaining to them should be examined in the light of the general principles described in this chapter to determine how to record the transactions involved and classify the assets.

2. Lost deposits

27.103 Under any form of contract, it is possible that one party makes a payment and the other does not deliver the goods, services or assets promised in the contract. In many cases this gives rise to an account payable/receivable that the first party may reclaim from the second. In some circumstances this may not be possible. For example, cheap airline tickets are often offered on a non-refundable basis. The fact that prepayments are non-refundable is part of the business plan of the company concerned. Their output should be measured as the value of sales without reduction for the payments by clients who did not avail themselves of the services to which they were entitled. Volume measures of output will depend on the services actually delivered and the impact of the non-refundable deposits will show up as a price effect. It will also be reflected in the consumption expenditure figures of those paying for services they did not in the end take delivery of.

E. Institutional units and sectors in more detail

Chapter 28: Non-financial corporations

A. Introduction

28.1 Non-financial corporations have long held an important role in the economy, but their role has shifted over time. For a long time non-financial corporations were the main organizational form for heavy industry such as manufacturing, mining, transport and utilities. Over time, their importance in producing services has also grown, and the growth of digitalization has led to large non-financial corporations investing in software assets, databases and digital platforms. These changes have led to more investment in intellectual property products relative to traditional plant and equipment. Non-financial corporations have also become increasingly global, with growing importance to multinational enterprises, foreign direct investment, and outsourcing of production. This chapter discusses how these and other developments are reflected in the system of national accounts.

28.2 This chapter discusses aspects of national accounting particular to corporations, many of which are common to both the financial and non-financial corporation sectors. Chapter 29 will focus on topics that are particular to financial corporations, but most of the issues discussed in this chapter are relevant to both financial and non-financial corporations, so reference will be made to corporations in general terms except for a few issues that are specific to non-financial corporations.

28.3 This chapter begins in section B by discussing the demography of corporations; how they come about, how they disappear and how they merge with one another. The consequences of these actions in the integrated framework of the SNA are almost all to do with recording the acquisition of the owner's equity in corporations and in some cases reclassification of assets and liabilities between sectors. Section C looks at some sub-sectoring of non-financial corporations and how this can be effectively deployed for analysis. Section D considers the relationships between corporations in the domestic economy and in the rest of the world. Much of this section is concerned with aspects of globalization and the derivation of relevant indicators, topics which are covered in more detail in chapter 23. Section E recalls some of the discussion in chapter 17 on capital services and looks further at the contribution of assets to production. Section F looks at the consequences of financial distress and the implications of remedial action for recording within the integrated framework of the SNA. The last section, section G, covers a rather different subject and looks at the emergence of commercial accounting standards such as the International Financial Reporting Standards (IFRS) and at the relationship between the IFRS and the integrated framework of the SNA.

1. A note on terminology

28.4 As explained in section B of chapter 5 on Institutional units and sectors, economic territory and residence, the term corporation is used in the SNA to cover a wide variety of legal forms of institutional units. In addition, the expression enterprise is used in connection with production activities. While corporation is normally the term of preference in the SNA, other documents, notably the *OECD Benchmark Definition of Foreign Direct Investment*, referred to as the *BD*, tend to use enterprise in preference to corporation. Further, the register of all enterprises or corporations is usually called a business register, even though "business" is not a term commonly used in national accounts. In this chapter, all three terms are used without implying a difference between them.

B. The demography of corporations

28.5 Maintaining a list of corporations is similar to maintaining a list of all individuals present in the country in that it is necessary to record new corporations as they come into being and to record those that cease to be. A business register normally serves an administrative function in keeping track of the existing businesses in the economy but also serves as the basic sampling frame for surveys directed at businesses. Thus it is normal for a business register to contain information on the activity, size, location, etc. of each business and to note when the main activity of a corporation changes from one type of activity to another. In addition a business register may also include information on the links one corporation may have to other resident and non-

resident corporations. Best practices in the development and maintenance of business registers are presented in the *UN Guidelines on Statistical Business Registers*.

1. The creation of corporations

28.6 Corporations can come into being in a number of ways. One is when what was previously an unincorporated enterprise within the household sector becomes incorporated. (The exact process of incorporation, such as when this may or must happen and how it is effected, will depend on the company law in effect in the country concerned.) When this happens, the assets and liabilities that were previously indistinguishably part of the household are separated off and become those of the corporation. In return for giving up control of these assets, and responsibility for the liabilities, the household acquires equity in the new corporation, initially exactly equal in value to the assets less liabilities transferred to the corporation. This transaction is recorded in the financial account. Once an enterprise is incorporated, the owning household no longer has a claim on the assets and has no responsibility for the liabilities but instead owns the equity in the corporation.

28.7 An individual may simply decide to set up a business, set up a legal entity and begin operations. Initially, there may be no assets of the relevant unit and no liabilities but as these accrue they belong to the corporation and the owner's equity changes correspondingly. On a larger scale, there may be an agreement between a number of units, one or more of whom propose a business plan and one or more of whom agree to finance the operation. A formal agreement results in which the split of the rewards from the corporation's activity is determined and also the division of the responsibilities. The assets of the new corporation are recorded as being acquired by it and an amount of owner's equity in the corporation incurred as a liability towards the parties supplying the finance is also recorded.

28.8 It is not necessary for the corporation to issue shares for the agreement on the share of the profit arising from the activities of the corporation to be binding. Cooperatives and limited liability partnerships are two examples of units the SNA treats as corporations where the way in which profits are shared between the owners is clear even though there are formally no shares.

28.9 Corporations may also come into being at the initiative of government, an NPISH or a unit in another economy. In addition, a corporation may come into existence by the splitting of a previously existing corporation. This possibility is discussed below under mergers and acquisitions.

2. The dissolution of corporations

28.10 Similarly there are several ways in which corporations may go out of existence. The first is when a unit is wound up after having been declared bankrupt. (The exact process varies from country to country. In some countries a declaration of bankruptcy means the corporation must stop trading immediately and the process of winding up its affairs begins. In other countries, there may be a time lag while the corporation has an opportunity to continue trading while it tries to recover its position and only if this fails is it wound up.) When a corporation is wound up, the receiver (the unit responsible for administering the liquidation of the corporation) sells all of its assets and distributes the proceeds amongst those having a claim on the corporation in a legally predetermined order. The shareholders are normally the last to be allocated any proceeds. In the case where the corporation is bankrupt it is quite common that the shareholders receive nothing. Only in very exceptional circumstances will the shareholders have any responsibility to provide funds towards settling other liabilities of the corporation.

28.11 A corporation may be wound up voluntarily by its owners. When this happens the assets are sold and the proceeds are divided amongst the owners according to the shares each has in the corporation. If the corporation is one that had issued shares, it can only be wound up if a clear majority of shareholders agree or if a clear majority of the shares are first acquired by a sufficiently small number of units who can reach agreement to wind up the corporation.

28.12 The acquisition of all shares of a corporation need not be a preliminary to the corporation ceasing to exist; it may simply continue with a smaller number of shareholders or even as a private unlisted corporation. The advantage of remaining incorporated is that there is a limit to the liability of the owners to meet any shortfall on the corporation's balance sheet. Thus even when an individual or group of individuals wants to control

the whole of a corporation they may choose simply to make it an unlisted corporation but still one with the limited liability that comes with incorporation.

28.13 A third way in which a corporation may disappear is through it being merged with another corporation, although a merger does not automatically imply the merged corporation disappears. This too is discussed below under mergers and acquisitions.

3. Nationalization and privatization

28.14 The government may decide to take ownership of a corporation for a number of reasons, either because it is felt it is in the public interest for government to control the corporation, in response to financial distress or for other reasons. When this happens the ownership of the corporation passes to the government, that is the government acquires the equity in the corporation, but the assets of the corporation remain on its balance sheet unless the government decides to nationalize the corporation and disband it at the same time. Often but not always, government may make a payment to the previous owners of the corporation but this may not necessarily correspond to their view of a fair price. Unless the corporation is dissolved, the process of nationalization leads to a change in the ownership of the corporation from private units to the government but the assets and other liabilities of the corporation continue to be owned by the corporation. The sale or purchase of equity in the corporation is recorded as a transaction in the financial account. There is also a reclassification of the assets and liabilities of a corporation being nationalized from the national private subsector to the public subsector recorded in the other changes in the volume of assets and liabilities account.

28.15 The government may also decide to privatize a corporation it currently controls. When this happens the most usual mechanism is that its shares are offered to the public either for sale or, in some cases, without charge or perhaps at a price lower than the market would bear. When shares are offered free or at a reduced price, a capital transfer from government to the eventual shareholders needs to be recorded in the accounts as well as the acquisition of shares. As with nationalization, only the equity in the corporation changes hands, not its assets and other liabilities, and the change in ownership of the equity is recorded as a transaction in the financial account. The ownership of the assets and liabilities remains with the corporation but they are reclassified from the public to national private subsector in the other changes in the volume of assets and liabilities account.

28.16 There is more discussion on nationalization and privatization in chapter 30 on General government and the public sector.

4. Mergers and acquisitions

28.17 The process of corporations merging and de-merging is of interest within an economy but especially interesting when the merger (or de-merger) involves units in different economies. Foreign direct investment can hardly be discussed without considering the subject of mergers and acquisitions. Some of the expressions commonly used in this field are listed below. The descriptions come from the *BD* but similar concepts appear also in the *BPM7*.

28.18 A merger refers to the combination of two or more corporations to share resources in order to achieve common objectives. A merger implies that, as a result of the operation, generally only one unit will survive and frequently occurs following an acquisition (described below). There are several types of merger possible.

a. A *statutory merger* relates to the business combination where the merged (or target) corporation will cease to exist. The acquiring corporation will assume the assets and liabilities of the merged corporations. In most cases, the owners of merged corporations remain joint owners of the combined corporation.

b. A *subsidiary merger* relates to an operation where the acquired corporation becomes a subsidiary of the parent corporation. In a reverse subsidiary merger, a subsidiary of the acquiring corporation will be merged into the target corporation.

c. *Consolidation* is a type of merger which refers to a business combination whereby two or more corporations join to form an entirely new corporation. All corporations involved in the merger cease

to exist and their shareholders become shareholders of the new corporation. The terms consolidation and merger are frequently used interchangeably. However, the distinction between the two is usually in reference to the size of the combining corporations. Consolidation relates to an operation where the combining corporations have similar sizes while merger generally implies significant differences.

d. A *reverse merger* is a deal where the acquiring corporation ceases to exist and merges into the target corporation. If a corporation is eager to get public listing in a short period of time, it can buy a corporation with listed shares and merge into it in order to become a new corporation with tradeable shares.

e. A *merger of equals* is a type of merger where the corporations involved are of similar size.

28.19 An acquisition is a transaction between two parties based on terms established by the market where each corporation acts in its own interest. The acquiring corporation achieves control of the target corporation. The target corporation becomes either an associate or a subsidiary or part of a subsidiary of the acquiring corporation.

a. A *takeover* is a form of acquisition where the acquiring corporation is much larger than the target corporation. The term is sometimes used to designate hostile transactions. However, mergers of equals (in size or belonging to the same sector of activity) may also result in a hostile takeover.

b. A *reverse takeover* refers to an operation where the target corporation is bigger than the acquiring corporation.

28.20 A divestment (de-merger) refers to the selling of the parts of the corporation due to various reasons:

a. A subsidiary or part of the corporation may no longer be performing well in comparison to its competitors;

b. A subsidiary or a part may be performing well but may not be well positioned within the industry to remain competitive and meet long-term objectives;

c. Strategic priorities of the corporation to remain competitive may change over time and lead to divestments;

d. Loss of managerial control or ineffective management;

e. Too much diversification may create difficulties and thus lead the parent corporations to reduce the diversification of its activities;

f. The parent corporation may have financial difficulties and may need to raise cash;

g. Divestments may be realized as a defence against a hostile takeover.

28.21 Corporate divestments can be conducted in different ways:

a. A *corporate sell-off* is the sale of a subsidiary to buyers that are other corporations in most cases.

b. A *corporate spin-off* occurs when the divested part of a corporation is floated on the stock exchange. The newly floated corporation is separately valued on the stock exchange and is an independent corporation. The shares in the newly listed corporation are distributed to the shareholders of the parent corporations who thereafter own shares in two corporations rather than one.

c. An *equity carve out* is similar to a corporate spin-off but the parent retains the majority control. This form has the advantage of raising cash for the divestor.

d. *Management buy-outs and buy-ins* occur when the buyer is the manager or a group of managers of the corporation that is being sold off.

28.22 In all these cases, transactions in the equity of the two corporations involved need to be recorded in the financial account and, possibly, a change of classification by sector in the other changes in the volume of assets and liabilities account. The further elaboration of criteria for recording transactions or other changes in volume for assets and liabilities appearing and disappearing in corporate restructurings has been put on the 2025 SNA Research Agenda.

C. Subsectors

28.23 The sub-sectoring of the non-financial corporations' sector is discussed in section D of chapter 5 on Institutional units and sectors, economic territory and residence. There is a three-way split of corporations between those that are national private corporations, those that are controlled by the government (public corporations) and those that are foreign controlled. Within national private corporations and public corporations, "of which" items are included for domestically controlled public and private corporations that are part of a domestic multinational enterprise group (or "MNE" group, see paragraph 5.38). Furthermore, for countries where this is important, it is recommended to include within foreign-controlled corporations "of which" items for special purpose entities (SPEs). In addition to these breakdowns according to ultimate control, it is also desirable to distinguish between market non-profit institutions (NPIs) and for-profit institutions (FPIs). The subsectors are shown in table 5.2 in chapter 5.

28.24 The reason for identifying NPIs is twofold. In the first place, in order to have a comprehensive picture of NPIs, as described in chapter 31, it is necessary to be able to identify those market NPIs that are assigned to the corporations' sector. Identifying them separately may be unexpected to some users, since there is often a misconception that all NPIs are non-market and fall in the NPISH sector. The other reason for identifying NPIs separately is that for some analyses it may be desirable to analyse corporations excluding the NPIs if it is felt that their economic behaviour is significantly different.

28.25 In identifying publicly controlled corporations, there is a question about how to provide long time series if there has been a significant change in the number and type of corporations subject to public control during the period. It is usual to provide a time series that includes only those corporations that were subject to public control at each period in question. Because interest usually focuses on how much of the corporate sector was controlled by the government, and how this has changed over time, this gives an appropriate picture. However, if the intent is to explore the behaviour of the same group of corporations over time a supplementary table may be prepared that takes the current definition of publicly controlled corporations and uses this set of corporations over the time period considered regardless of whether or not they were publicly controlled for the whole of that period.

28.26 Identifying foreign-controlled corporations and domestically controlled corporations that are part of an MNE group is key to looking at the interaction between the domestic economy and the rest of the world. Chapter 23 on Globalisation discusses the role of MNEs and members of MNE groups in the economy and describes supplementary data that can be used for monitoring the activities of foreign-controlled corporations and domestic MNEs. Exploring this in greater detail is the subject of the following section.

D. Relations between corporations in different economies

28.27 Deregulation of markets, technological innovations and cheaper communication tools have allowed investors to diversify their participation in competitive markets abroad. In consequence, a significant increase in cross-border financial movements including direct investment has become a key factor in international economic integration, more generally referred to as globalization.

28.28 Regular analysis of direct investment trends and developments is an integral part of most macroeconomic and cross-border financial analysis. It is of prime importance to policy analysts to identify the source and destination of these investments. Several indicators based on foreign direct investment statistics facilitate the measurement of the extent and impact of globalization.

1. Foreign direct investment

28.29 Foreign direct investment is a key feature of the external accounts and it is useful to review some of the basic concepts associated with this. Further details can be found in both *BPM7* and the *BD*. In the context of foreign direct investment, the term enterprise tends to be used rather than corporation, but as noted in the introduction, no difference of meaning is intended.

28.30 Direct investment statistics embody four distinct statistical accounts:

a. Investment positions;

b. Financial transactions;

c. Associated income flows between enterprises that are related through a direct investment relationship; and

d. Other changes in the value of assets and liabilities, especially revaluation terms.

28.31 Foreign direct investment is a category of cross-border investment associated with a resident in one economy (the direct investor) having control or a significant degree of influence on the management of an enterprise (the direct investment enterprise) that is resident in another economy. Ownership of 10 percent or more of the voting power is evidence of a direct investment relationship.

28.32 Foreign direct investment may also allow the direct investor to gain access to the economy of the direct investment enterprise which it might otherwise be unable to do. The objectives of direct investors are different from those of portfolio investors who do not have significant influence on the management of the enterprise.

28.33 Direct investment enterprises are corporations which may either be subsidiaries in which over 50 per cent of the voting power is held, or associates in which between 10 per cent and 50 per cent of the voting power is held or they may be quasi-corporations, such as branches, which are effectively 100 per cent owned by their respective parents. Enterprises that have no direct investment influence upon one another (that is the 10 per cent voting power criterion is not met) but are directly or indirectly influenced in the ownership hierarchy by the same enterprise (which must be a direct investor in at least one of them) are described as fellow enterprises.

28.34 Foreign direct investment relationships are identified according to the criteria of the Framework for Direct Investment Relationships (as described in the *BD*), including both direct and indirect relationships, through a chain of ownership. Suppose that corporation A controls corporation B and B controls C then A in effect has control over C also.

2. Foreign direct investment and globalization

28.35 Foreign direct investment positions show an important class of investment made abroad and received from abroad, divided between equity and debt, at a given reference point in time. Foreign direct investment positions as a percentage of GDP give one indication of the extent of globalization at that time. These structural indicators demonstrate the interdependence of economies.

28.36 Financial transactions show the net inward and outward investments with assets (acquisitions less disposals or redemptions) and liabilities (incurrence less discharges) presented separately by instrument in any given period. Foreign direct investment financial transactions expressed as a percentage of GDP provide one indicator of the changes over that period in the degree of globalization of an economy. This indicator provides early information on the relative attractiveness of economies (both domestic and foreign) for new investments after allowing for the withdrawal of investments or disinvestment during the same time period.

28.37 Foreign direct investment income provides information on the earnings of direct investors and of the direct investment enterprises. Foreign direct investment earnings arise (i) from distributed earnings as well as undistributed earnings which are treated as reinvestment of earnings in that enterprise, and (ii) from interest on inter-company loans, trade credit and other forms of debt. Foreign direct investment income flows as a percentage of GDP provide information on the relative importance of the earnings of foreign direct investment in both the reporting economy and abroad.

3. The role of "pass through funds"

28.38 "Pass through funds" or "funds in transit" are funds that pass through a direct investment enterprise resident in one economy to an affiliate in another economy, so that the funds do not stay in the economy of the resident enterprise. Such flows have little impact on the economy they pass through. While special purpose entities (SPEs), holding companies and financial institutions that serve other non-financial affiliates are particularly associated with funds in transit, other enterprises may also have pass through funds in foreign direct

investment flows.

28.39 Pass through funds are included in foreign direct investment in standard presentations because they are an integral part of a direct investor's financial transactions and positions with affiliated enterprises. (An exception is made for positions in debt instruments between related financial institutions.) Excluding these funds from direct investment would distort and substantially understate foreign direct investment financial flows and positions at aggregate levels. Further, inclusion of these data in foreign direct investment promotes symmetry and consistency among economies. However, for the economies through which the funds pass, it is useful to identify inflows and outflows not intended for use locally by the unit concerned.

28.40 Foreign direct investment has a key role to play in development, especially in emerging countries. In order to explore how much of global foreign direct investment reaches these countries, and where it originates, a supplementary analysis is useful. Such an analysis identifies the country where the pass through funds originate by identifying the first unit other than a pass through fund in the host or investing economy (in the outward or inward chain) as appropriate.

4. Ultimate investing country

28.41 Presentations of foreign direct investment according to the *BD* show the country of the immediate counterparty and the industry of the immediate counterparty for outward foreign direct investment. For inward foreign direct investment, it is possible to determine not only the immediate counterparty but also the ultimate investor. The ultimate investor for this purpose is the enterprise that has control over the investment decision by having a direct investment position in the direct investment enterprise. As such the ultimate investor controls the immediate direct investor. It is identified by proceeding up the immediate direct investors ownership chain through the controlling links (ownership of more than 50 per cent of the voting power) until an enterprise is reached that is not controlled by another enterprise. If there is no enterprise that controls the immediate direct investor, then the direct investor is effectively the ultimate investor in the direct investment enterprise.

28.42 The country in which the ultimate investor is resident is the ultimate investing country in the foreign direct investment enterprise. It is possible that the ultimate investor is a resident of the same economy as the direct investment enterprise. (A controls B controls C. A and C are resident in the same economy but B is resident in another.) This phenomenon is known as round tripping.

28.43 In order to transform the usual presentation by country to the supplementary ultimate investing country presentation, the entire FDI position that is attributed to the country of residence of the immediate direct investor(s) is allocated to the country of residence of the ultimate controlling parent.

5. Multinational enterprises

28.44 As well as information relating to (foreign) direct investment where only a 10 per cent voting power is required to identify a (foreign) direct investor, there is interest in analysing the activities of members of MNE groups, where control is determined to exist through (i) an immediate (foreign) direct investment relationship where the direct investor owns more than 50 per cent of the voting power in the (foreign) direct investment corporation; or (ii) an indirect (foreign) direct investment relationship arising from the ownership of voting power in one direct investment corporation that owns voting power in another corporation(s) – indirectly through a chain of control (see paragraphs 5.120 and 5.121). Thus the members of MNE groups correspond to foreign-controlled enterprises in the sense of subsectors in the integrated framework of the SNA.

28.45 If a domestically controlled public or private corporation is an MNE or is a member of an MNE group, i.e., it is either the ultimate controlling parent of one or more foreign corporations or it is controlled by a domestic MNE that is the ultimate controlling parent of one or more foreign corporations, then it should be classified as part of an "of which" subsector of corporations that are part of a domestic MNE group (see paragraph 5.38). Table 5.1 provides a template for institutional sector accounts and external accounts which is designed to present details on foreign-controlled corporations and domestically controlled public and private corporations that are part of domestic MNE groups.

28.46 In addition to statistics on the activities of MNEs, statistics are also available for the wider group of corporations with links in other economies, not just those where there is majority ownership, called foreign affiliates. These statistics are known as Foreign AffiliaTes Statistics (FATS), and are described in *European Business Statistics Compilers' Manual for Foreign Affiliate Statistics (FATS)* and elaborated in *Measuring Globalisation: Handbook on Economic Globalisation Statistics.* Work is continuing to ensure the consistency of the various sets of statistics cited in these and other publications on globalization.

28.47 Another template for supplementary data presented in chapter 23 on Globalisation (see table 23.2) identifies the role of enterprise characteristics in the current account. The template breaks down domestic versus foreign ultimate control and also calls for the identification of small and medium-sized enterprises. The chapter also suggests providing statistics on the Activities of Multinational Enterprises (AMNE statistics) and the closely related FATS. These statistics provide an additional perspective on the impact of foreign direct investment that is complementary to data on international flows and positions.

6. Outsourcing

28.48 There are two ways in which a non-financial corporation A in economy X may have another non-financial corporation B in economy Y assemble parts for it. Although the effect appears similar, the consequences for recording in the accounts are quite different. Suppose that A and B are unrelated enterprises, and B contracts to do work for A in return for a fee. (This case is described elsewhere, for example in chapter 23.) In this case there is no recorded transfer of the items from A to B (or X to Y). Only the agreed fee is recorded as a transaction between the two economies.

28.49 However, if A and B both belong to the same group of corporations, then it may be the case that there is a transfer of the risks and rewards of the items on their dispatch from A to B. The question is whether a realistic price is entered for the items in the trade figures for both A (and X) and B (and Y) as the items move internationally. When A and B are related, transfer pricing is used to value the transactions between affiliated enterprises. In some cases the transfer prices may be distorted. Suppose the tax regime in Y is more liberal than that in X. It may then be the case that A artificially lowers the price of the items dispatched to B in order to minimize profits in X while B records a higher profit subject to the lower tax regime in Y. In principle, international accounting standards and the balance of payments recommendations indicate that items transferring across borders should be valued at "arm's length" prices, that is to say prices that would prevail if there were no relationship between the two corporations involved. Making such an adjustment is not easy but it is in the interests of tax authorities, customs officials and the statistician to see whether appropriate adjustments can be made if the sums involved are significant and adjustments can be made with sufficient reliability. Having said that, compilers often refrain from making such adjustments to transfer prices, for reasons of feasibility and consistency of cross-border flows. Other aspects of global production are discussed in section B of chapter 23.

E. The contribution of assets to production

28.50 Chapter 17 on Capital services discusses the role of capital services in production and the calculation of multifactor productivity (MFP). The assets to be considered in calculating productivity are those fixed assets that are both owned and used by the enterprise plus any natural resources and other non-produced assets (including contracts, leases and licences and possibly marketing assets) the enterprise both owns and uses in production. Assets that are not legally owned by the enterprise but are subject to a financial lease are included in the calculations in the same way that they are recorded on the balance sheet of the enterprise. However, assets that are leased under an operating lease agreement are excluded. This may mean two enterprises undertaking similar activities using similar assets may show different productivity figures because one uses assets it owns and the other assets that it leases. An area for supplementary analysis is to consider compiling information on assets according to the using rather than the owning industry and to look at the implications for operating surplus and productivity of the use of leased rather than owned assets.

F. The consequences of financial distress

28.51 Signs that a non-financial corporation is suffering financial distress include the level of profits that it has been generating recently and possibly the level of dividends it is able to offer. It is also probable that it suffers a cash flow problem and is unable to meet its liabilities on a timely basis. Competitors may take the opportunity to launch a takeover bid. However, if no takeover bid is offered the question here is how the corporation may survive at all.

28.52 In a similar way, a financial corporation may suffer financial distress because it has difficulty in raising finance and is unable to service its liabilities. Again this is a circumstance in which a competitor may launch a takeover bid but this may not always be forthcoming.

28.53 If the corporation, whether financial or non-financial, is deemed to be of national importance this may be an instance where government steps in and offers either to take over the corporation, in effect nationalizing it, or may offer a major capital injection in return for a degree of control, possibly full control, of the corporation. The recording of nationalization and capital injections by government as well as of the steps that may be taken under a bailout are discussed in chapter 30 on General government and the public sector.

28.54 Another possibility is that the government offers a guarantee to the creditors of the corporation in distress. The activation of a one-off guarantee is treated in the same way as a debt assumption. The original debt is liquidated and a new debt is created between the guarantor and the creditor. In most instances, the guarantor is deemed to make a capital transfer to the original debtor, unless the guarantor acquires an effective claim on the creditor, in which case it leads to the recognition of a financial asset (a liability of the debtor). The recording of guarantees including those offered by government is discussed in part B of chapter 25 on Selected issues in financial instruments.

1. Bad debts

28.55 All corporations, but especially financial corporations, may suffer from bad debts and this phenomenon may be particularly acute when other aspects of the economy also exert financial pressure on the corporation. Within the SNA sequence of economic accounts, loans are always recorded as the amount that is due to be repaid to the creditor. In cases where the debtor has a bad credit rating this may overstate the market value of the loan. This is seldom done on a loan by loan basis but is regularly done for classes of loans.

28.56 The SNA identifies a subset of bad debts as non-performing loans. As explained in paragraph 14.77, these are loans whose payments of interest or principal are past due by 90 days or more or interest payments equal to 90 days or more have been capitalized, refinanced, or delayed by agreement, or payments are less than 90 days overdue, but there are other good reasons (such as a debtor filing for bankruptcy) to doubt that payments will be made in full. The SNA recommends that supplementary items be compiled for the accounts showing the nominal and market value of bad loans and the implications for interest flows, the amount of interest accruing on the nominal value, the amount of interest outstanding from previous periods and the amount relating to the current period that is unpaid. The proposed supplementary items are discussed in paragraphs 14.78 and 14.79.

2. Debt rescheduling

28.57 According to the accrual basis, repayments of debts are recorded when they are extinguished (such as when they are paid, or rescheduled, or forgiven by the creditor). When arrears occur, no transactions should be imputed, but the arrears should continue to be shown in the same instrument until the liability is extinguished. See paragraph 4.208 for more information.

G. Links to International Financial Reporting Standards (IFRS)

28.58 The *International Financial Reporting Standards (IFRS)* are a comprehensive set of accounting standards designed to apply to the general purpose financial statements and other financial reporting of profit-oriented

corporations.

28.59 There is a close relationship between the SNA sequence of economic accounts and *IFRS*. They are both accrual-based accounting standards and have similar measures of revenues, expenditures, assets and liabilities and similar accounting concepts of control, economic substance, recognition, and valuation. Compilation of macroeconomic statistics in accordance with the guidelines of the SNA is facilitated by the adoption of *IFRS* by profit-oriented corporations.

28.60 The SNA and *IFRS* have different objectives. The objective of general purpose financial statements is to provide financial information about the reporting unit that is useful to existing and potential investors, lenders and other creditors in making decisions relating to providing resources to the unit. The SNA sequence of economic accounts is an integrated system of accounts covering the total economy and its five institutional sectors, two of which are the financial corporations and the non-financial corporations. Its objective is to allow users of macro-economic statistics to monitor and analyse the performance of the economy.

28.61 This difference in objectives causes some differences in the information presented and in how accounting concepts are implemented. The main differences between *IFRS* and the SNA sequence of economic accounts involve reporting unit, scope, consolidation, recognition of assets, recognition of liabilities, valuation, and the treatment of revaluations and other changes in volume. Table 28.1 summarizes the differences between SNA sequence of economic accounts and *IFRS*.

28.62 For multinational enterprises, the standard accounts may be available only for the group as a whole where relationships between enterprises in different countries have been consolidated. In this case, national accountants would need to consult other sources for the required non-consolidated data.

28.63 Three particular areas where the *IFRS* adopts approaches somewhat different from the SNA are (i) in the area of the recognition of holding gains and losses as income, (ii) in the recording of provisions and contingent liabilities, and (iii) in recording operating leases where the *IFRS* has different treatments for lessors and lessees. Concerning provisions, as discussed in paragraph 14.115, certain types of provisions should only be recorded as supplementary items in SNA balance sheets (see also table 28.1 above). Concerning operating leases, under *IFRS*, lessees adopt a "right-of-use model" where they recognize a right-of-use asset and a lease liability, except for short-term leases (leases for 12 months or less) and leases of low value assets. By contrast, lessors adopt the "risks and rewards incidental to ownership model" where they classify each of their leases as either an operating lease or a finance lease. The treatment of operating leases in the integrated framework of the SNA is based on the concept of economic ownership and treats operating leases, regardless of duration, as not involving a change of economic ownership (see section B of chapter 27 on Contracts, leases, licenses and permits). This treatment is applied consistently for both lessees and lessors such that there is coherence across the sequence of institutional sector accounts.

28.64 In addition to the *IFRS* for private corporations, the *International Public Sector Accounting Standards (IPSAS)* perform a similar function for public sector units. There is a discussion of the *IPSAS* in chapter 30 on General government and the public sector.

Table 28.1. Comparison of the SNA sequence of economic accounts and *IFRS*

SNA sequence of economic accounts	*IFRS*
Objective	
Allow users of macro-economic statistics to monitor and analyse the performance of the economy.	To provide financial information about the reporting unit that is useful to existing and potential investors, lenders and other creditors in making decisions relating to providing resources to the unit.
Reporting unit	
The statistical reporting unit is an institutional unit, defined as a unit that is capable, in its own right, of owning assets, incurring liabilities, and engaging in economic activities in its own name. However, the primary focus is on groups of institutional units (sectors or subsectors).	A unit that is required, or chooses, to prepare financial statements. A reporting unit can be a single unit or a portion of a unit or can comprise more than one unit. A reporting unit is not necessarily a legal entity.
Scope	
Total economy and the resident units comprised by its five institutional sectors. Units classified in the non-financial corporations' and the financial corporations' sectors are especially relevant here.	Profit-oriented units engaged in commercial, industrial, financial and similar activities, whether organized in corporate or in other forms.
Consolidation	
Flows between the units within a sector or subsector are generally not consolidated. Consolidated accounts may be compiled for complementary or analytical presentations.	*IFRS* requires presentation of consolidated financial statements for the controlling unit. In this case, the reporting unit is the group, defined as the parent and its subsidiaries. Control is the main criterion that determines consolidation.
Recognition of assets	
Based on economic ownership. The economic owner of a non-financial asset or financial asset is the institutional unit entitled to claim the economic benefits associated with the use of the asset by virtue of accepting the associated risks.	Based on control. Control of the resource entails the ability to use the economic resource and obtain the economic benefits that may flow from it.
Recognition of liabilities	
To maintain symmetric recording in the integrated framework of national accounts, liabilities are only recognized when there is a recognizable corresponding claim of a counterparty. For example, provisions for one-off guarantees and bad debts are recognized in *IFRS* but not in the SNA sequence of economic accounts. However, additional information on provisions is provided in supplementary tables; see paragraph 14.115.	A liability is recognized whenever there is a present obligation of the unit to transfer economic resources as a result of past events. In *IFRS*, there is no need for a counterparty to recognize an asset for the reporting unit to recognize the liability.
Valuation	
Current exchange prices are used to value flows and stocks. Production cost, the exchange price of a similar item, the written-down current replacement cost or present value of future economic benefits may be used as alternative valuation methods if an exchange price is unavailable.	On initial recognition, *IFRS* requires measurement at transaction price. On subsequent measurement, historical cost, fair value, value in use, fulfilment value, or current cost can be used.
Revaluations and other volume changes	
Holding gains or losses are reported in the revaluation account, and changes in volume are reported and in the other changes in volume of assets and liabilities account.	Some gains or losses due to changes in prices or changes in volume of assets and liabilities are recognized in the Statement of Profit of Loss and some are recognized in the Statement Presenting Comprehensive Income.

Chapter 29: Financial corporations

A. Introduction

29.1 Financial corporations have taken on increased importance over the years, in many economies, reflecting both growth and diversification. Generally, the amount of funds channelled through the financial system has been on a long upward trend, reflecting financial innovation, as well as demographic trends and other factors. This has tended to promote the expansion of non-bank financial intermediaries, such as investment funds, insurance corporations and pension funds, security and derivative dealers, central clearing counterparties and other specialized financial intermediaries. Alongside these trends, the increased sophistication of financial activities and the interlinkages among types of financial corporations present the possibility of spillover effects in the event of financial disruptions originating in one subsector of the financial corporations' sector or from outside of the sector. The impact on the real economy of such events can be significant. The global financial crisis which began in 2007-08 underlined the need for improved and more detailed statistics on financial corporations alongside the need to better understand their sources and uses of funds.

29.2 There are many uses of financial corporations' detailed information, some of which are statistical and support national accounts' compilation and analysis. Other uses include monetary and financial sector analysis and studies of the financial system or specific financial activities. More recently, a key use of these data is financial stability analysis, sometimes requiring supplementary breakdowns of sectors or financial instruments, discussed later in this chapter.

29.3 This chapter discusses in more detail the financial corporations' sector and its subsectors within the integrated framework of national accounts. The financial system is an essential element of most developed and developing economies, though its structure can vary across countries. For example, deposit-taking institutions may be dominant in certain economies. Non-bank financial intermediation, sometimes referred to as "shadow banking", has taken on increased importance in other economies. In short, the size, complexity and the composition of the financial system may be quite different across economies. Nevertheless, the components and measures of these systems are defined in a consistent way to promote data accuracy and international comparability of national accounts statistics.

29.4 This chapter is organized as follows. Section B provides an overview of financial corporations. It also touches upon technological innovation and alternative organizational structures as supplementary statistics. Section C discusses the activities of the various subsectors of financial corporations. Section D presents supplementary breakdowns on non-bank financial intermediation, while section E discusses the links to monetary and financial statistics, as presented in the MFSMCG. The material in this chapter dovetails with material in chapter 5 on Institutional units and sectors, economic territory and residence as well as section E of chapter 25 on Selected issues in financial instruments. It also complements chapter 26 on Islamic finance and chapter 28 on Non-financial corporations.

B. Overview of financial corporations

1. General concepts

29.5 As noted in chapter 5 on Institutional units and sectors, economic territory and residence, the financial corporations' sector is made up of all resident corporations that are principally engaged in providing financial services, including insurance and pension funding services, to other institutional units. It comprises all resident financial corporations regardless of the residence of their shareholders, the branches of non-resident corporations that are engaged in financial activity on the economic territory on a long-term basis, and all resident non-profit institutions that are market producers of financial services. In addition, due to its important role in the financial system, the central bank, although predominantly producing non-market services for the society as a whole, is also treated as a financial corporation. Furthermore, despite the use of the term corporations, the sector also includes investment funds and pension funds.

Definitions and sectoring

29.6 The integrated framework of the SNA contains a detailed breakdown of financial corporations. Financial corporations are allocated to subsectors of the financial corporations' sector based on their principal activities. The nine "core" subsectors of financial corporations are the central bank; deposit-taking corporations except the central bank; money market funds (MMF); non-MMF investment funds; other financial intermediaries except insurance corporations and pension funds; financial auxiliaries; captive financial institutions and moneylenders; insurance corporations; and pension funds.

Domestically based statistics

29.7 As is the case for all institutional units, financial corporations are only compiled for units which are resident in the country; for more details on the residence of institutional units, see chapter 5 on Institutional units and sectors, economic territory and residence. Regardless of whether the universe for any given institutional (sub)sector is comprised of a combination of legal entities, or some higher level of consolidation for complex enterprises, or some combination of the two, the integrated framework of national accounts is based on the principle of residence.

29.8 Some subsectors of the financial corporations' sector can be dominated by large institutional units, often complex corporations. In the case of complex corporations, it is possible that some domestic subsidiaries are consolidated, although legal entities often coincide with the concept of an institutional unit. Where there is some degree of consolidation, these institutional units are classified to the subsectors based on their primary activities.

29.9 Many of the larger financial institutions are multinational enterprise groups (MNE groups) with operations and affiliates/subsidiaries in more than one economic territory. In other words, they own one or more foreign corporations/units (either as majority owned or wholly owned subsidiaries), but in the case of these foreign-controlled corporations the accounting is limited to the financial relationships, be it equity investments or loans, including related income, in the non-resident affiliated corporations. Similarly, for foreign-controlled corporations operating on the economic territory of a country, only the activities of the subsidiaries resident in the country are relevant for the integrated framework of the SNA.

Production and the nature of financial services

29.10 The production of financial services is the result of financial intermediation (including services related to insurance and pensions) or auxiliary financial activities. The nature of the services offered by financial corporations varies by subsector, and in some jurisdictions (depending on regulations) certain financial corporations may offer more than one type of service. An example of this would be a bank also offering investment type of services, taking advantage of the retail banking system of local branches.

29.11 The composition of assets and liabilities in the subsectors of financial corporations reflect their financial activities and, hence, may affect the measures of output in these subsectors. Financial services may be paid for explicitly or implicitly, and some transactions in financial assets involve both explicit and implicit charges. Both explicit and implicit service charges are common across a number of subsectors. For example, deposit-taking corporations (except the central bank) charge fees but most of their output is measured as implicit financial services on loans and deposits, as described in chapter 7 on Production account.

29.12 Financial services are produced almost exclusively by financial corporations because of the usually stringent supervision of the units providing such services. There are a few exceptions. For example, a retailer may offer credit facilities to its customers (e.g., financing the purchases of consumer goods). However, even in these cases the credit is usually provided by a subsidiary which is classified in the financial corporations' sector. Similarly, financial corporations rarely offer non-financial services. Financial corporations may also create subsidiaries dealing with particular forms of financial services. For example, a credit card operation may be associated with a particular bank but may be institutionally separate.

29.13 There are three broad types of financial services: the services of financial intermediaries, the services of financial auxiliaries, and other financial services. Financial intermediation involves financial risk

management as well as maturity and liquidity transformation, where the institutional units incur financial liabilities (accepting deposits or issuing bills, bonds or other securities) or uses own funds to acquire mainly financial assets (making loans and advances, or purchasing bills, bonds or other securities). This includes insurance corporations and pension funds which invest assets on behalf of their policyholders and contributors. The output of these services is calculated in different ways. Auxiliary financial services facilitate financial intermediation by acting on behalf of others at no risk to themselves. Other financial services are provided by financial corporations where most of their assets and liabilities are not available on open financial markets (e.g., captive financial institutions).

29.14 There are five main ways in which financial services are provided and charged for. Two of these are discussed below: explicit charges for financial services and implicit financial services on loans and deposits. More details on these two types of financial services as well as information on the measurement of financial services associated with the central bank, those associated with the acquisition and disposal of financial instruments, and those associated with insurance and pensions can be found in chapter 7 on Production account and the *FPFS*.

Explicit charges for financial services

29.15 Many services come under the heading of explicit services and may be provided by different subsectors of financial corporations. Deposit-taking corporations may explicitly charge for arranging loans or explicitly charge for services related to deposits; explicit charges may also exist for other services. Other types of financial intermediaries also charge various explicit fees. Investors in investment funds may be confronted with different fee structures, which can include one-time sales charge (front-end load commission), ongoing charges, transactions costs and account fees. Even though these service charges may be paid by the investment funds and subsequently charged, implicitly or explicitly, to the investors, all services related to investment funds are considered to be directly charged to the investors; see paragraphs 7.177 to 7.179. Securitization corporations charge fees that cover administrative charges and default risk, either as a fixed amount or percentage of the asset value being securitized. Underwriters' security and derivative dealers can charge a variety of fixed or transactional based fees and commissions. Lending and leasing corporations typically charge fees on the origination of loans and leases, as well as any penalties for late payment. Central clearing counterparties' "clearing charges" are paid by traders to settle transactions in securities through the agency. Factoring firms also charge fees, typically as the discount on the accounts receivables purchased.

29.16 Captive financial institutions and moneylenders may also charge various types of fees for their services, although output may also be calculated as the sum of costs.

29.17 Financial auxiliaries charge fees for their various services. For example, flotation corporations may charge other corporations to arrange the issue of shares. Foreign exchange bureaus may charge a foreign transaction fee as well as a currency conversion fee. Investment managers charge management fees against the funds (usually as a percentage of the assets) that they manage on behalf of their clients. Notably, head offices of financial corporations may charge fees, or their output may be calculated as the sum of costs.

Implicit financial services provided in association with interest charges on loans and deposits

29.18 Deposit-taking corporations (except the central bank) primarily accept deposits and extend loans. This activity provides a mechanism which allows the depositor to lend to the borrower. Each of the two parties pays an implicit fee to the bank for the intermediation service provided. The implicit services are measured using a reference rate. The difference between the interest rate actually paid to banks by borrowers and the reference rate plus the difference between the reference rate and the interest rate actually paid to depositors is used to calculate charges for the implicit financial services on loans and deposits, recorded as output of financial intermediaries and consumption of the borrowers and depositors. The reference rate applies to both interest paid on loans and interest paid on deposits, so that the amounts of interest recorded as such in the integrated framework of the SNA are calculated as the reference rate times the level of loans and deposits in question; see paragraphs 7.180 to 7.189 for a further discussion.

29.19 A number of deposits and loans embed charges for implicit financial services on loans and deposits. The types of deposits include transferable deposits and other deposits, which typically include saving deposits, fixed term deposits, non-negotiable certificates of deposit; deposits of limited transferability, and overnight and very short-term repurchase agreements if they are considered part of the definition of broad money or if they concern agreements between deposit-taking corporations; shares of other similar evidence of deposits issued by savings and loan associations, building societies, credit unions and the like; liabilities under reverse transactions (e.g., securities repurchase agreements, securities lending with cash collateral, and gold swaps) incurred by deposit-taking corporations; and cash margins for financial derivative contracts and reserves held by a factor in a factoring arrangement if they are liabilities of a deposit-taking corporation. The types of loans cover amounts overdrawn on overdrafts, installment loans, hire-purchase credit, revolving credit, mortgage loans, and loans to finance trade credit; reverse transactions (except those that involve liabilities of deposit-taking corporations); and financing in the form of a financial lease.

29.20 Financial intermediaries other than deposit-taking corporations can also generate implicit financial services on loans and deposits, while they only offer loan facilities. Consumer or business lending corporations, financial subsidiaries of retailers or financial corporations that specialize in leasing (e.g., property companies, aircraft leasing companies) as well as moneylenders' loans from own funds or from funds received from a sponsor are examples of financial corporations that make loans without accepting deposits.

29.21 Some other points are worth noting relating to implicit financial services on loans and deposits. Liquidity transformation services are considered to be part of these services, and a single reference rate should preferably be used to estimate the relevant services. The choice of reference rate should be determined by national circumstances with the reference rate based on (a) a single observable exogenous rate (e.g., interbank lending rates), or (b) a reference rate based on a weighted average of observable exogenous rates of maturities with different terms (weighted by the stock of loans and deposits in each maturity), or (c) a weighted average of the endogenous interest rates on loans and deposits. Credit default risk should, in principle, be excluded from implicit financial services on loans and deposits, but this is typically not done in practice. Therefore, any countries that can manage to make this adjustment are encouraged to compile unadjusted supplementary measures for international comparability. For international trade in implicit financial services on loans and deposits, the relevant services should be calculated by at least two groups of currencies (national and foreign currency), with (ideally) separate reference rates applied for each currency; see paragraph 7.186 for additional details. No implicit financial services on loans and deposits are calculated for central banks.

29.22 Lastly, implicit financial services on loans and deposits must be allocated to user sectors by applying either a “bottom-up” approach or a “top-down” approach. The former approach is used when the compilers have access to counterparty data, such that SNA interest and the related implicit service charges can be accurately allocated. The latter approach is used when such information is not available, as a consequence of which compilers have to distribute SNA interest and the implicit service charges using a variety of indicators. It may be that both approaches are combined if counterparty data are partial. In both instances, compilers will have to make a distinction between implicit service charges that should be recorded as intermediate consumption of the users and service charges that affect final consumption of users, by referencing the underlying deposits and loans as either corresponding to corporations, households as consumers or to households as producers (owners of unincorporated enterprises, self-employed persons, or producers of services related to owner-occupied dwellings).

2. Technological innovation

29.23 Technology-enabled innovation in financial services, generally referred to as “Fintech”, is a relatively new trend in the financial system. Fintech often simply refers to new ways of providing financial products, technologies, and access modes to products already available on the market. These can have a material effect on the provision of financial services, resulting from new business models, applications and processes. It can also result in new products. Fintech is not linked to specific institutional (sub)sectors and could be used across institutional sectors.

29.24 Financial intermediation platforms, for example, facilitate financial transactions, such as payment, funding or other transactions. They receive fees or commission for their financial services. These new financial services fall within existing categories of products.

29.25 Units that are involved in Fintech do not constitute a separate institutional (sub)sector. However, statisticians are encouraged to compile further supplementary (*of which*) breakdowns for subsectors, if the impacts of these financial innovations are considered significant and if the relevant activities can be separately identified. If the unit providing a specialized financial platform is a separate institutional unit, it would be classified as part of financial auxiliaries. This can be the case with crowd funding platforms and peer-to-peer lending platforms.

29.26 Fintech and other topics related to digitalisation are discussed comprehensively in chapter 22 on Digitalisation.

3. Alternative organizational structures as supplementary statistics

Financial corporations by control

29.27 The extent of multinational enterprise (MNE) groups in the financial corporations' sector continues to expand. This applies to both foreign and domestically controlled institutional units. For the analysis and an improved understanding of the national financial system, it is also important to distinguish financial corporations which are controlled by government or other public units. For these reasons, it is recommended to break down the financial corporations' sector, to show foreign-controlled corporations as well as corporations that are part of a domestic MNE group, in addition to publicly controlled corporations. More specifically, the following subsectors based on control are recommended as standard components:

- Public financial corporations
    - Of which: part of a domestic multinational enterprise group
- National private financial corporations
    - Of which: part of a domestic multinational enterprise group
- Foreign-controlled financial corporations
    - Of which: special purpose entities (SPEs)

Nationality-based statistics

29.28 Many national non-financial and financial corporations have large foreign investments in foreign securities and other financial instruments, and/or hold significant equity investments abroad through majority or wholly owned foreign subsidiaries (outward direct investment positions in the external accounts). Both types of investments expose them to a variety of risks, but the nature of the investment and the risk is different, and more extensive, for direct investment. Where the domestic direct investor has controlling interest in foreign subsidiaries, it is fair to say that the risks are only partly measured in the national financial accounts and balance sheets, and in the external accounts (including the coordinated portfolio investment survey and the international investment position statistics). This may signify an important data gap with respect to financial stability concerns.

29.29 Business accounting of corporations allows for the consolidation of majority owned or wholly owned foreign subsidiaries in the parent enterprise. However, such a global consolidation for multinational financial corporations is inappropriate for most macroeconomic statistical uses (as explained above). At the same time, there is increasing interest in worldwide consolidated data for these MNE groups, especially for systemically large corporations. Therefore, for a more thorough understanding of corporate risks across economies it is useful to look at MNE groups, both in an aggregated form and by individual MNE group. Such supplementary statistics from a so-called "nationality perspective" put emphasis on international inter-corporate ownership and control in corporate groups as well as geographical counterpart relationships and can shed light on various types of potential financial risks and vulnerabilities.

29.30 The "nationality perspective" was pioneered by the Bank of International Settlements (BIS), which made use of both domestic and globally consolidated banking data to better understand the global banking system as well as the exposures of domestic deposit-taking corporations banks. In addition to providing a global picture

of balance sheets, it also allows for a more detailed analysis of counterpart country information or geographical exposures of balance sheets. This helps in gaining a broader understanding of the supply of credit, both domestic and foreign sourced; the use of funds; funding risks associated with currency exposures and maturity risk; and country credit risk.

29.31 Given the large number of non-deposit-taking financial MNE groups with significant national and global operations, combined with the need for enhanced financial stability monitoring, a case can be made to extend the nationality approach beyond deposit-taking corporations to the other financial corporations' subsectors.

29.32 In this context, it is useful to consider two generic cases of corporate group exposures.

- The domestic MNE group (say, in country A) faces risks with respect to its own assets and liabilities, which include its foreign investment abroad. However, a simple analysis of their direct investment positions can mask the total exposure of the parent firm. In the case of foreign-controlled enterprises (say, in country B), the domestic parent's risk may extend to the foreign subsidiaries' assets and liabilities, in terms of earning power and valuation, relative to liquidity concerns leverage as well as market risk, credit risk, exchange rate risks. The foreign subsidiaries are the immediate debtors, but the domestic parent corporation is usually ultimately responsible for this debt (by explicitly or implicitly guaranteeing such debt). In this sense, cross-border connectivity is more complex than the parent's foreign investment claim. And, under certain conditions of financial instability, when this connectivity impacts the domestic parent, it can also feed back to the domestic parent's economy.

- A further dimension to this can extend beyond the domestic parent if, in turn, this enterprise is ultimately owned by another foreign corporation. In other words, the domestic parent in country A owns a foreign affiliate in country B, but a corporation in country C ultimately owns the corporation in country A. This implies that the corporation in country A is the intermediate controlling parent and the corporation in country C is the ultimate controlling parent. In order to better understand the inter-corporate ownership exposures in the national economy (in this case, country A), it is useful to stratify the domestic parents of foreign-controlled affiliates into (a) ultimate parents, and (b) intermediate parents (where the ultimate parent is in another country). In this sense, one can view nationality measures for corporations as two separate levels of commitments with different degrees of exposure. This also reinforces the usefulness of the foreign direct investment concept of ultimate controlling parent.

29.33 Nationality-based statistics are relatively new in the context of macroeconomic statistics, less so in the context of reporting for supervisory and regulatory purposes. But, by combining existing country data sources and/or leveraging additional information (e.g., additional surveys, administrative records, or financial supervisory reports) or using newer techniques such as record linkage, it is possible to work towards developing such measures. For example, large MNE groups have financial reports on a globally consolidated basis. Compilers have financial reports for resident units of these same firms for the purpose of compiling national accounts and other macroeconomic statistics. Foreign direct investment statistics also exist for these same units, with geographical details. In addition, many countries publish various statistics (income and expenditure, assets and liabilities, employment, etc.) for MNE groups, as part of Foreign Affiliate Trade Statistics (FATS) and/or Activities of Multinational Enterprises (AMNE) statistics. Underlying all these sources of information are data on individual companies. What is required is the ability to cross-reference datasets, and to generate a methodology for nationality-based estimates that can ensure international comparability.

C. Financial corporations' subsectors

29.34 Financial corporations are engaged in a wide range of financial activities. They are grouped together in institutional subsectors largely according to their dominant activities, following the primary activity criterion to classify individual units with multiple activities. Many financial corporations in one subsector may offer similar types of financial services as those in other subsectors. For example, a securities dealer, classified as a financial intermediary, can also undertake brokerage activities similar to a financial auxiliary. However, often this does not affect sub-sectoring, as financial corporations may have unconsolidated subsidiaries undertaking the various activities.

29.35 This section highlights the main functions of each type of financial corporation in each of the subsectors to help compilers delineate different types of financial corporations. This includes the central bank, deposit-taking corporations except the central bank, money market funds, non-money market investment funds, other financial intermediaries except insurance corporations and pension funds, financial auxiliaries, captive financial institutions and money lenders, insurance corporations, and pension funds.

1. Central bank

Definition and functions

29.36 The central bank is the financial institution (or institutions) that exercises control over key aspects of the financial system. Their principal functions generally include: conducting monetary policy, including by issuing currency and regulating money supply and credit; managing international reserves and the payments system; promoting financial stability, including regulation and macroprudential supervision; and acting as a banker to the government.

29.37 Monetary policy is exercised through a variety of means, including: interest rate policy, typically be setting the central bank's main policy rate (e.g., refinancing operation, overnight lending rate), this influencing short-term markets; open market operations by buying and selling financial instruments, mainly government debt instruments; refinancing banks through repurchase agreements; exchange rate policy; imposing bank reserve requirements; and communicating to the public through forward guidance and other communication activities. In many jurisdictions, central banks are also responsible for financial stability, including through bank supervision, monitoring the financial positions (e.g., monitoring liquidity, leverage, capital adequacy, etc.) of large financial institutions, as well as assessing the financial risks and vulnerabilities of the economy more generally.

29.38 The following financial intermediaries are classified to this subsector.

- The national central bank, including where it is part of a system of central banks, which in most economies are separately identifiable institutions that are subject to varying degrees of government control, engage in different sets of activities, and are designated by various names (e.g., central bank, reserve bank, national bank, or state bank).
- Currency boards or independent currency authorities that issue national currency which is fully backed by foreign exchange reserves.
- Central monetary agencies of essentially public origin (agencies that manage foreign exchange or issue banknotes and coins that maintain a complete set of accounts but are not part of central government).
- National agencies, including notional resident units, of centralized currency unions.

29.39 As long as the central bank is a separate institutional unit, it is always allocated to the financial corporations' sector even though it is primarily a non-market producer. Many central banks regulate and/or supervise other deposit-taking corporations and sometimes also other financial corporations, and these activities are included in the central bank subsector. However, if such activities are performed by a separate institutional unit (or units), they are classified as financial auxiliaries.

29.40 A few economies do not have central banks. Any central banking activities that are performed by the government and cannot be separated into specific institutional units are consolidated with general government.

29.41 In economies in which some central banking activities are performed wholly or partly outside the central bank, particularly holding reserve assets, consideration should be given to compiling supplementary data for the monetary authorities.

29.42 The existence of a currency union central bank (common currency and single monetary policy) does not preclude the existence of national central banks. However, the residence of the currency union central bank is the region to which the union applies.

29.43 Some central banks may also engage in commercial banking, as a secondary activity.

2. Deposit-taking corporations except the central bank

29.44 Deposit-taking corporations, except the central bank, have financial intermediation as their principal activity. To this end, they have liabilities, principally in the form of deposits or other financial instruments that are close substitutes for deposits (such as short-term certificates of deposit). The liquid liabilities of deposit-taking corporations are typically included in measures of "broad money". The liabilities of deposit-taking corporations are the source of funds for the credit extended primarily in the form of a variety of types of loans. This constitutes the fundamental line of business for the financial intermediaries in this subsector. The major investment income receivable and payable reported by these institutions is interest. The structure of this subsector can differ across jurisdictions, sometimes with a significant public corporations' presence. The following financial intermediaries are classified in this subsector.

29.45 Banks (sometimes referred to as commercial banks) include a wide variety of institutions and functions which can, along with the size and concentration of the banking industry, differ across economies. Some banks are primarily retail banks, with the bulk of their deposit-taking and lending activities as well as other services focused on households. Other banks, such as all-purpose banks, offer a range of services to a broad set of clients, for example, by offering loans to both business and consumers in their lending activity. Universal banks offer a multitude of different services. In addition to the loans and deposits business, they can provide a variety of investment services including asset management, investment advisory services, services related to securities transactions, underwriting and financial analysis. Some of these banks have evolved over the years, expanding their business line through mergers and acquisitions, and can also offer non-traditional services such as investment funds as well as insurance from non-consolidated units which are typically classified in other institutional (sub)sectors.

29.46 It is also possible that some merchant banks (i.e., banks which specialize in financing international trade and focus on large corporate clients) are also included in this subsector, if they raise funds through deposits or their close substitutes. However, if their sources of finance are shares and debentures, they would be classified in other financial intermediaries except insurance corporations and pension funds.

29.47 This subsector also includes corporations, which are sometimes referred to as near-banks or quasi-banks. These are deposit-taking corporations that operate similarly to banks, either or not under different legislation. They are often smaller in size and typically focus on a niche within the business of deposits and loans, in the latter case sometimes related to specialized financing. Examples include savings banks that tend to operate more like retail banks, with a focus on interest-bearing deposits and long-term investments such as mortgage loans. Specialized mortgage loan companies and other lenders that accept deposits as a principal source of funds are also covered in this group. In some jurisdictions, commercial banks have acquired and consolidated savings banks. Other examples are savings and loan associations (sometimes referred to as credit unions) are a type of cooperative savings bank that is typically owned (and overseen) by its retail customers. The customers are members of the association, each of them holding a nominal share in the organization, typically a small portion of the initial deposit. Also included are building societies, which are cooperatives similarly owned by their members and mainly offer mortgage financing.

29.48 Near-banks also encompass other specific types of deposit-taking corporations, such as agricultural credit banks and rural credit banks. The former can be large financial institutions, sometimes organized as cooperatives. In some economies, these banks are public corporations.

29.49 Other specialized banks or other financial corporations which take deposits or issue close substitutes for deposits, such as municipal or regional-provincial credit institutions, post banks, post office giro institutions (any of which may be public corporations), giro banks and other electronic money institutions with liabilities that are part of broad money, and micro-lenders who predominantly raise funds by deposits are also included in this subsector.

3. Money market funds (MMFs)

29.50 Investment funds are collective investment schemes that are split into two subsectors within the financial corporations' sector. The first of these are Money market funds (MMFs) which issue shares or units to the public, which are primarily invested in money market instruments, such as short-term debt securities of government, commercial paper, promissory notes, repurchase agreements on short-term government

securities, bankers' acceptances and short-term certificates of deposit and various types of bank deposits. As a result, MMF shares or units are viewed as close substitutes for deposits and the relevant funds are segregated from other investment funds. Any investment trusts, unit trusts and other collective investments schemes with the same characteristics are also grouped in the subsector.

29.51 MMFs are open-ended funds (see below). They are considered low-risk investments that are highly liquid. In some countries, MMF shares or units can be transferred by cheque or other means of direct third-party payment. Investors can choose differently comprised portfolios of MMFs in which to invest (e.g., a Treasury fund).

4. Non-MMF investment funds (S124)

29.52 In most economies the second and larger component of investment funds consists of non-MMF investment funds. Non-MMF investment funds are collective investment schemes that raise funds by issuing shares or units to the public, and investing, on their own account, predominantly in longer-term financial assets, such as equity shares, bonds, mortgage loans, and non-financial assets. Shares or units invested in these investment funds are not close substitutes for deposits and are not transferable in the same way as shares or units of MMFs. These collective investment schemes can be specialized funds, focused on specific types of investments (e.g., debt securities, equities, investments tied to non-financial assets) tailored to investors' needs. These investments can evolve over time, adapting to the funds' portfolio strategy or market conditions. Broad types of specialized funds include:

- Equity funds, which invest in shares of some combination of publicly traded companies. Some funds may be designed to provide a steady stream of dividend income (income funds), while others are focused more on holding gains (growth or accumulation funds). There are also private equity funds (which are not publicly listed and traded) which focus on investing in unlisted companies. Closely associated with equity funds are index funds that are based on a pre-set basket of shares or an index.
- Fixed income or bond funds, which invest in combinations of debt securities issued by corporations and governments.
- Real estate investment funds, which specialize in debt (including mortgages) and equity of companies that purchase real estate. These are sometimes also referred to as real estate investment trusts. However, this subsector notably excludes any such similarly termed domestic non-financial corporations set up as trusts, or similar types of funds, which hold and rent out real estate, thus mainly producing non-financial services. In the case of hybrid real estate funds, these would be classified according to the principal activity (i.e., share of value added) and, as such, most of these funds would likely not be included in the financial corporations' sector. On the other hand, mortgage real estate trusts providing mortgage finance or other real estate loans, or investment funds that invest in mortgage-backed securities, are included among real estate investment funds.
- Hedge funds are heterogeneous schemes, with high minimum investments with relatively unconstrained and wide ranging investment and/or financing strategies in liquid assets (e.g., short selling, derivatives) in order to maximize absolute returns. This degree of liquidity means that they are usually set up as open-ended funds, although there may be time restrictions on redemptions
- Mixed/balanced funds with a wide variety of investments – shares, bonds and other investments (including crypto assets and credit). Balanced funds offer a combination of safety, income and holding gains. Some of these funds stick to a rigid allocation of shares and fixed income instruments. For other funds the mix is more flexible. Mixed funds should not hold more than 50% of their assets in one type of financial instrument.
- Investment funds investing in other funds (funds of funds). These comprise fettered funds which only invest in funds that are administered by the same management company, and unfettered funds which invest in any fund (including those managed by competing companies). A case can be made for consolidation of fettered funds and individual funds administered by the same management company, though this is not typical done because the latter may have shareholders other than funds of funds.

In the case that special purpose government funds, usually called sovereign wealth funds, can be considered

as separate institutional units, they are more likely to be classified as captive financial institutions.

General characteristics of investment funds

29.53 Essentially, MMFs and non-MMF investment funds or trusts issue shares or units and invest predominantly in financial assets. As such, they are separate institutional units with multiple investors/beneficiaries and a complete set of financial records. Management and administration of the funds may be provided internally but are usually outsourced to specialized units. Fund managers may be separate institutional units classified as financial auxiliaries or they may be part of the secondary activities business of other financial corporations, such as banks or other deposit-taking corporations.

29.54 It may also be the case that investment funds are set up and/or owned by another institutional unit, such as a pension scheme. In doing so, pension funds may have outsourced part of their investments to a fully owned investment vehicle with a separate legal status and autonomy of decision.

29.55 Investment funds can be set up as either open-ended or closed-ended. Open-ended funds allow for buying and selling shares issued by the fund on a regular basis, so that the investment is liquid. The shares or units are, at the request of the holders, repurchased or redeemed directly or indirectly out of the undertaking's assets. These funds issue new shares to match investors' demand and retire shares as investors redeem. The shares of open-ended funds can be traded on an exchange (exchange-traded funds) or be unlisted and sold directly to investors. At the same time, holders can remain invested in the fund indefinitely. Open-ended funds are sometimes referred to as mutual funds.

29.56 Closed-ended funds only apply to non-MMF investment funds. They have defined maturity periods and investors can be locked in during the maturity period, such that the investment is comparatively less liquid. They issue a limited number of shares that are open for subscription only during a specified period, and new shares or units are rarely issued once the fund has been launched. Thereafter investors can only acquire new shares or units on the secondary market, either through purchases directly from other investors or on an exchange. Private funds, notably private equity funds, are unlisted closed-ended funds. Some personal trusts can also be included here, if there are multiple investors/beneficiaries. However, when the trust is restricted to a strictly limited number of beneficiaries, they would be included under captive financial institutions; see the discussion of trusts in paragraphs 5.97 to 5.105.

5. Other financial intermediaries, except insurance corporations and pension funds

29.57 As the name suggests, this subsector contains a heterogenous group of financial intermediaries which raise funds on financial markets (other than deposits or their close substitutes) for the acquisition of various types of assets.

29.58 Financial corporations engaged in the securitization of assets are special purpose units/vehicles, set up as either trusts or tax-exempt companies with the purpose of pooling loan assets (consumer debt, mortgages, business credit, etc.) and issue marketable asset-backed securities to investors. They are typically set up by the original lenders (e.g., a bank), to move segments of assets off their balance sheets and/or to shift their portfolios toward securities with higher liquidity. Even though the assets are transferred to the special purpose unit/vehicle, the lenders may still administer all aspects of the underlying loans, and the debtors may be unaware of the securitization. The securitization corporations offer asset-backed and mortgage-backed securities with attractive rates of return to a broad range of investors, which can include the original lenders themselves. Securitization activity may also include structured securitization (related to alternative funding formats) and synthetic securitization (related to credit risk)

29.59 Underwriters, security and derivative dealers operating on own account are financial corporations that engage in the business of dealing in securities and other financial instruments on their own account. These units are often both dealers and brokers in a transaction, buying and selling from the firm's own inventory of securities. They are financed initially with equity, and typically raise the funds to finance their investments through various means. This can include the returns from secured financing such as collateralized loans to their clients (e.g., repurchase agreements) or securities lending arrangements, or the returns from investment strategies (e.g., the returns from short positions financing long positions). They may also rely on commercial paper to

raise funds. These corporations often also provide portfolio management or other investment support services.

29.60 Corporations engaged in lending or leasing cover a variety of financial corporations. These include the (non-consolidated) sales finance subsidiaries and associates of retailers, such as those involved in the financing and leasing of household goods and transport equipment, personal financing corporations (e.g., consumer loan companies), and other companies offering various types of commercial financing and/or leasing. This subsector also includes credit card companies. Units such as "buy now pay later service providers" might be included here, if they are separate institutional units.

29.61 Central clearing counterparties provide clearing and settlement transactions in securities, derivatives and repurchase agreements markets. Clearing relates to identifying the obligations of both parties to a transaction, while settling is the exchange of the securities, derivatives and repurchase agreements and the corresponding payments. The central clearing counterparties involve themselves in transactions as principals (often trading on own account or assuming a counterparty position). They are, effectively, the seller to all buyers and the buyer to all sellers. They mitigate counterparty risk using tools like margin requirements and the practice of monitoring of member firms' creditworthiness. If central clearing counterparties do not act as principals to the counterparties, then they are considered as corporations that facilitate financial transactions and would thus be classified as financial auxiliaries (with exchanges and settlement institutions).

29.62 Bank re-structuring agencies that support strategies to liquidate, recapitalize or merge banks as well as the recovery of bank assets, where the main risks and rewards are with the unit, and not another unit. This activity usually takes place under situations of financial distress.

29.63 Specialized financial corporations that provide various types of financing, as follows:

- Factoring firms purchase accounts receivable from a business (improving that business' liquidity) by paying the amount due less fees – usually charged as a discount from the face value of the accounts receivable, although it is possible that explicit fees are charged as well. Factoring has largely replaced trade bills (i.e., discounted bills of exchange with banks). The factoring firm assumes all (non-recourse factoring) or part (recourse factoring) of the risk of non-performance by the debtor. The difference between the two types of factoring has an impact on the size of the discount..
- Firms (primarily investment banks) that facilitate corporate reorganizations, including mergers and acquisitions, by providing short-term financing as required. Investment banks assist corporations in raising funds in equity and debt markets and provide strategic advisory services for mergers, acquisitions, and other types of financial transactions. They also invest their own funds in the securities of their clients as well as in hedge funds dedicated to investing in corporations. Investment banks usually do not have deposit liabilities that meet the definition of broad money.
- Firms involved in import/export finance (which may include public corporations).
- Venture capital and development capital firms that provide financial support to start-ups and other businesses with the potential for rapid and significant growth, as well as other venture capital initiatives. These firms usually raise funds from investments by a limited group of partners.

6. Financial auxiliaries

29.64 Financial auxiliaries constitute a wide-ranging group of corporations engaged in activities associated with or supporting financial transactions and markets or with providing the regulatory context for these transactions. These types of institutional units do not take ownership of the financial instruments being transacted. Corporations facilitating financial transactions, such as central clearing counterparties, stock exchanges, derivative exchanges, and repurchase agreement settlement institutions, are classified as financial intermediaries if they generally act as principals to the counterparties to the underlying transactions; otherwise, they are classified as financial auxiliaries. The majority of financial auxiliaries generate their income from fees and commissions.

29.65 Various types of brokers are classified to this subsector. Loan brokers match borrowers and financial corporations engaged in lending. They try to secure favourable loan options and financing rates on behalf of

their clients who are seeking funds. In some economies they are actively involved in promoting real estate financing. Securities brokers arrange the purchase or sales of shares, bonds and other securities. They can also advise customers regarding financial investments However, unlike investment dealers, they do not acquire securities on their own account. Insurance brokers are independent consultants working with multiple insurance companies on behalf of clients seeking insurance or clients that are already policyholders. Salvage and claims adjusters and insurance and pension consultants perform functions that support the insurance and pension business.

29.66 Central supervisory authorities of financial intermediaries and/or financial markets are part of this subsector, but only if they are separate institutional units. The supervisor of financial corporations is typically one (or more than one) public corporation(s) that regulate financial corporations, protecting depositors, policyholders, pension plan members and others, with the purpose of promoting a sound and efficient financial system. Securities and exchange boards or commissions are generally public corporations that enforce the laws governing securities and derivatives markets. Units engaged in supervisory functions, which cannot be considered as separate institutional units, are consolidated within the central bank or general government, as appropriate

29.67 Corporations that support financial markets and transactions in different ways are also classified to this subsector:

- Foreign exchange bureaus, or currency exchanges, allow customers to exchange one currency for another. To be included in this subsector they must constitute separate institutional units which are distinct of financial corporations that offer similar services, such as banks.
- Stock exchange companies provide trading in listed shares, but may also offer trading services in other financial instruments such as marketable debt securities and exchange-traded derivatives.
- Crypto asset exchanges, trading platforms and other platforms allow users to buy, sell, and stake (i.e., lend) crypto assets for a fee or commission.
- Insurance exchanges are insurance-related businesses that are set up to allow customers to exchange insurance contracts, thereby spreading the risks associated with those contracts amongst participants.
- Flotation corporations are firms that manage the issue of securities, including initial public offerings.
- Corporations that arrange derivative instruments such as swaps, options and futures (without issuing them) can be included here, if not consolidated with financial corporations in other subsectors.
- Corporations that guarantee bills and similar instruments are also classified to this subsector, if not included elsewhere. For example, transferable bills of exchange, which are commonly used in international trade, make the guarantor the third party to the arrangement.
- Credit rating agencies assess the creditworthiness of an issuer of debt securities with regard to its financial obligations. They evaluate the issuer's overall financial capacity and willingness to make scheduled payments on a specific issue.
- Corporations that provide infrastructure for financial markets exist to ensure that customers (businesses and governments) can make and receive payments securely and efficiently. This covers securities depository companies, custodians, clearing offices that facilitate transactions without acting as a counterparty and nominee companies holding investments for others. This also includes paying for and delivering securities and other financial instruments. It is worth noting that banks and other financial intermediaries are also involved in payments systems, such that the financial infrastructure is interconnected.
- Corporations primarily involved in the operation of electronic payment systems (including online payment systems and mobile payments platforms) that do not incur liabilities against the activities in the underlying instruments.
- Crowdfunding and peer-to-peer lending platforms may also be included here. These units facilitate lending of money from individuals and other lenders, often unsecured loans, to unrelated individuals or small businesses thus circumventing traditional financial intermediaries. The loans are for relatively

small amounts and made mostly to individuals for consumption or credit refinancing. They operate online by matching individual investors and other lenders with borrowers but assume no liability or potential risk associated with the loans, and the main source of income is the fees collected from borrowers and lenders. If in the rare instance own funds are used for lending, then they would be classified as other financial intermediaries.

29.68 Administrators of institutional investors are also included in this subsector. These are firms that administer pension funds, investment funds, other funds associated with companies, as well as private funds (which can include estate, trusts and agency accounts). They are responsible for the implementation of a fund's investment strategy and overseeing its trading activities but do not hold the assets. In many economies, the assets under their management are relatively large.

29.69 Three other types of institutional units are also included in this subsector. The first is the head offices of financial corporations which are principally engaged in controlling financial corporations, or groups of financial corporations. These corporations do not undertake the intermediation business of those financial corporations. Some head offices may be consolidated with the financial corporations that they control and would, therefore, not be institutional units to be classified in this subsector. The second is resident head offices of foreign banks, if they do not accept deposits or extend credit on their own account. The third is non-profit institutions that are independent legal entities serving financial institutions. This would include, for example, foundations set up by financial corporations.

7. Captive financial institutions and money lenders

29.70 Institutional units that provide financial intermediation services, but where their assets and most liabilities are not transacted in open financial markets, are classified to this subsector. These corporations transact with a limited group, such as subsidiaries, or subsidiaries under the same holding corporation, or units that make loans from their own funds, or funds provided by one sponsor.

29.71 Different corporate structures give rise to units with a variety of functions, as included in this subsector:

- Holding companies are legal entities that hold only the assets (owning controlling levels of equity) of a group of subsidiary corporations and whose principal activity is owning the group without providing any other service to the enterprises in which the equity is held, that is, they do not administer or manage other units. They typically receive income (mostly dividends) from their holdings. They are sometimes referred to as "parent companies", given their ownership of subsidiaries. Holding companies can be domestically or foreign-owned. Often holding companies are set up for mergers and acquisitions activity.

- Special purpose units are legal entities (usually a corporation) that are set up for specific and/or temporary purposes, such as raising funds in open markets to be used by their corporate parent company. The specific purpose might be to finance a large project or complex equity financing deals, while insulating the principal firm from any associated risks. These units are usually set up to obtain specific advantages to the global enterprise provided by the host jurisdiction, such as tax lowering strategies. They are usually foreign-owned (i.e., they have a non-resident parent) and are directly or indirectly controlled by non-residents, in which case they are known as special purpose entities (SPEs). Similarly, brass plate companies are legal entities that lack any connection to the jurisdiction of incorporation – that is, set up in a foreign country with an office and no material operations. They typically only hold liquid assets unless they are shell companies with no assets and are also often associated with tax lowering strategies. Shell companies can be set up prior to cross-border corporate acquisitions or to provide access to a parent financial company to financial markets abroad. Special purpose units included here exclude securitization vehicles that qualify as separate institutional units and are to be classified as other financial intermediaries.

- Conduits, intragroup financiers and treasury functions when these functions are taken on by a separate institutional unit. Conduits (often SPEs) typically refer to units that raise funds, which could be in the form of debt securities, shares, or partnership interest on open financial markets for other affiliated corporations or for various types of public projects. Often the conduit's liabilities are guaranteed by the parent company or government.

29.72 Various types of lenders that provide loans through own funds or through funds provided by a sponsor are classified to this subsector. Moneylenders are lenders that can undertake different functions, including making loans, providing cheque-cashing services, money orders, etc. Loans are often at relatively high rates of interest. Pawn shops are a type of used merchandise store that provide financing to clients in return for holding an asset for a specified period of time as collateral. They can also make unsecured loans. Captive specialized lending institutions provide loans from funds received from a sponsor, such as a government unit or an NPISH. They can be involved in various types of lending such as student loans, farm loans, import/export loans (possibly including some factoring), etc. These units can include public corporations.

29.73 Sovereign wealth funds (SWFs) are included here, if they actively manage their portfolios and provide financial services on a market basis to the general government; otherwise, they are part of the general government sector, unless the unit is a resident of another economy. An SWF is created and owned by the general government to hold, manage or administer assets (including foreign investments), with the goal of achieving certain financial objectives. The funds can originate from various sources, including privatization proceeds, fiscal surpluses and receipts from natural resources, etc.

29.74 Trusts and similar wealth holding units that solely hold assets and liabilities, along with the associated property income, for a restricted group of investors or beneficiaries are also included here. In the case of a single beneficiary or investor, the accumulated assets should be assigned to the sector of the beneficiary or investor, unless the relevant unit is resident in another economy than its beneficiary or investor. Estates, trusts and agency accounts/funds (ETAs) mainly include various types of personal trusts for restricted groups of beneficiaries, where the restricted group of beneficiaries assumes the risks and rewards; see paragraphs 5.97 to 5.105 for a general discussion on the treatment of trusts. The fund managers, or trustees, of these units are typically classified as financial auxiliaries, and are not subject to the risks and rewards of the fund. In practice, however, ETAs may be included elsewhere; given that they are often relatively small, it may be case that some of the funds are derived residually as part of the household sector. In terms of those that can be measured, these would mostly concern larger funds.

8. Insurance corporations

29.75 The insurance corporations' subsector consists of financial intermediaries that offer various forms of insurance to individual institutional units or groups of units. Reinsurance (insurance contracts between insurance companies) is used to manage the risk associated with large, unexpected, claims. These corporations are either called insurance or assurance companies. Some types of insurance companies are more specialized in the products that they offer, and some are general insurers. Independent insurance agents (that sell products for any insurance company) are not part of this subsector, but rather classified as financial auxiliaries. For a full discussion of insurance corporations, see chapter 24 on Insurance and pensions.

9. Pension funds

29.76 This subsector consists of social insurance pension funds that are institutional units separate from the units that created them. As such, these units are autonomous pension schemes with accumulated assets (i.e., (partially) funded plans), that are geared to provide income in retirement as well as other benefits (e.g., death benefits) for groups of employees and self-employed, including persons temporarily without employment. These pension funds are often organized as trusts (referred to as trusteed pension plans) and they exist because of legislation and/or regulatory framework. They would typically have a board of trustees that oversees the fund. Pension funds can either be defined benefit or defined contribution type of schemes, depending on how the retirement benefits are determined. Separately constituted pension funds of international organizations are residents of the economy in which they are located or, if lacking a physical presence, residents of the economy in which they are incorporated and registered. For a full discussion of pension funds, refer to chapter 24 on Insurance and pension.

D. Non-bank financial intermediation and supplementary instrument details

1. Background

29.77 In most economies the banking industry is well regulated and typically governed by legislation. Deposits may have reserve requirements with the central bank (against client deposits), they may be subject to withdrawal requirements by type of account, and they may also be protected (deposit guarantee schemes). The types of loans banks, or deposit-taking corporations more generally, can make may also be subject to restriction. Certain types of other investments may also be restricted, such as with derivative trading. Deposit-taking corporations may also have to follow certain accounting and supervisory requirements, such as those related to having specific provisions for loan losses and general provisions for losses on other financial assets. As a result, the financial stability risks associated with deposit-taking corporations are reasonably well understood and monitored.

29.78 This is not necessarily the case across the diverse group of other financial intermediaries involved in a variety of credit intermediation in the financial corporations' sector. For institutional units involved in non-bank financial intermediation (NBFI), there may be varying degrees of oversight, which can differ from economy to economy. Therefore, it is fair to say that the financial stability risks are less well understood in the case of NBFI, while at the same time increasing amounts of funds are flowing through these units. Moreover, many institutional units involved in NBFI may be loosely associated with banks and other financial intermediaries, making them more vulnerable to systemic risk.

29.79 The global financial crisis that began in 2007-08 has led to an increased interest in developments within the financial world, particularly NBFI (colloquially referred to as "shadow banking") and its impact on economic/financial risk as well as financial sustainability. Since this activity had expanded in many economies, by providing an alternative to bank funding, it also presented a source of risk to financial stability, as the global financial crisis which started in 2007-08 revealed.

29.80 NBFI as a whole may be captured by all financial corporations, except the central bank, other deposit-taking corporations and financial auxiliaries. This section focusses on additional details that can provide a deeper understanding of the activities of these units involved in NBFI. In this respect, it should be acknowledged upfront that the standard breakdown of the financial corporations' sector, as discussed in section C, as well as the standard breakdown of financial instruments in the sequence of economic accounts may not be sufficient to identify associated risks within non-bank financial intermediaries. To get a better understanding of these risks, it would be necessary to introduce additional supplementary subsector and instrument details. Without these additional details, much of the relevant parts of this activity would remain "in the shadows". In the next subsection, the most relevant supplementary details are discussed, for each of the main subsectors of the financial corporations' sectors.

2. Further institutional sector breakdowns

Money market funds (MMFs)

29.81 Money market funds (MMFs) are highly liquid, and tend to be quite engaged in credit intermediation, liquidity transformation and maturity transformation. They are vulnerable to liquidity risk (liable for a run), interest risk, as well as vulnerable to credit problems. There are two basic types of funds for which a supplementary split is recommended; and even though the difference is likely not large, this split can provide some further insight into the systemic risk of MMFs.

- Constant net asset value funds, as the name suggests, aim to maintain a constant value. The assets are accounted for at amortized cost. However, these funds are subject to potential losses and increases in operating costs.
- Variable net asset value funds allow for fluctuation in values and are accounted for at market prices. In this case, the assets are valued at the prices at which they could be sold in the period, and the share price of such funds can fluctuate and are subject to market risk.

Non-MMF investment funds

29.82 Most non-MMF investment funds shares are open-ended, but closed-ended funds also exist and can vary in size across economies. Therefore, given that these broad types of funds face different risks, and that they have grown rapidly in many economies, this is the recommended high-level supplementary split of this subsector.

- Open-ended funds are highly liquid and offer frequent redemptions as noted in section C above. In other words, shares of the funds can be purchased and sold frequently. There is no limit on the number of shares that can be issued by such funds, and the shares can be purchased through a broker or directly from the fund. At the same time, these funds tend to focus on longer term assets which may not be liquid. This maturity mismatch vulnerability between assets and liabilities can become problematic during times of market stress. Market risk is also a factor.
- Closed-ended funds may also be traded on an exchange, but because new shares are not issued, they are less liquid and face market risk. They may also face credit risk. Investors entering or leaving the market must buy or sell existing shares.

29.83 Further, within each type of fund, the risks can vary. Equity funds face quite different risks than bond funds, which again face different risks than real estate funds or hedge funds. As a result, it is recommended that the supplementary subsector information also include, for both open-ended and closed-ended funds, the following breakdowns to arrive at an enhanced picture of the potential vulnerabilities in this subsector:

- Real estate funds;
- Equity funds;
- Bond funds;
- Mixed or balanced funds;
- Hedge funds; and,
- Other funds.

Other financial intermediaries, except insurance corporations and pension funds

29.84 As explained in section C, this subsector contains a variety of financial intermediaries, with each facing different risks, such as credit, market and maturity mismatch risks. As such, it is recommended that the following supplementary subsectors be made available to users:

- Financial corporations engaged in the securitisation of assets: Various types of credit instruments with different risk profiles are routinely converted to securities and sold to investors. The risk profile of credit provided by credit cards is different from that of mortgage loans, and, overall, investors typically know little about the quality of the individual assets being securitized. More generally, securitization activity can be associated with various risks, including credit and liquidity risks, but also possibly reputational, transaction, compliance, and legal risk. As a result, it is important to produce supplementary statistical information on these vehicles for economies for which this activity is significant. This will allow users access to information on the securitized assets as well as the short-term and long-term asset-backed securities.
- Financial corporations engaged in lending and leasing: These corporations cover various types of lending, from the financing arm of retail companies, consumer and other personal loans, commercial financing and leasing, as well as financing via credit cards. In some economies, the funds advanced by these companies are relatively large, such that their balance sheet composition is of interest in terms of credit risk and potential maturity mismatches, since their external sources of funds are often short-term.
- Underwriters, security and derivative dealers: These corporations engage in the business of dealing in securities and riskier financial instruments on their own account and face, amongst others, market risk and counterparty risk. As noted in section C above, their sources of funding are specialized. Therefore,

in countries with well-developed financial systems their activities can be substantial, and therefore their assets and liabilities may be of interest in relation to financial stability.

- Specialised financial corporations: These corporations provide various types of financing over a wide range of financial corporations and activities, including factoring, investment banking, international trade finance and venture capital, each with risks attached. Growth can be sporadic for some components and steady for others, while each uses different sources of funding. The activities of these special type of financing units may be significant in certain economies, such that their assets and liabilities may also be relevant for financial stability purposes.
- Central clearing counterparties: These corporations provide clearing and settlement transactions in securities, derivatives and repurchase agreements markets, often assuming a counterparty position. As a result, these intermediaries can face a number of potential risks, including counterparty credit risk, liquidity risks, settlement bank risk, custody risk, investment risk, and operational risk (e.g., IT systems risk). Since the global financial crisis, their activity has grown as the proportion of centrally cleared transactions has expanded, and may be of interest for financial stability purposes.

Captive financial institutions and money lenders

29.85 The financial activities and therefore the risks are quite different across the group of financial intermediaries within the subsector of captive financial institutions and moneylenders. As a result, supplementary breakdowns of the following groups of units may be useful for better understanding and monitoring financial risks and vulnerabilities, especially in the case of large cross-border transactions and positions.

- Estate, trust and agency accounts (ETAs) are captive financial institutions that hold assets and liabilities on behalf of a party/parties and for the benefit of another party/parties than itself (beneficiary/beneficiaries). The beneficiaries of ETAs bear the risk in these arrangements, and there can be a fair bit of private wealth in these types of units in certain countries. Given that there are no restrictions on investments, fund performance depends partly on the decisions of the fund managers and on the developments in various markets in which assets are invested. It may thus be relevant to have more granular statistics on ETAs, especially in economies where these types of funds are prevalent, and holdings are significant.
- Corporate groups' captive financial institutions are institutional units created by a financial or non-financial non-resident or resident corporate group to fulfil specific financial activities, other than insurance, for the sponsor. The directors of corporate captive institutions typically have limited or no discretionary powers; activities are strictly defined by the terms of the institution's contract or arrangement. A corporate captive institution is often, though not exclusively, a satellite company of another unit and forms an ancillary part of the associate's business by warehousing particular assets or risks. Thes captive financial institutions include units, such as financing conduits, holding companies, intra group lending companies, and captive factoring and invoicing companies. Of particular note are foreign-owned SPEs in this group. These entities have generated a lot of interest in recent years, reflecting both their growth as well as a need to better understand their purposes. Little is known about their operations, which can range from raising funds on behalf of a foreign parent to being part of a tax minimization strategy for a multinational corporation, such that supplementary data could prove beneficial.
- Other captive finance companies and moneylenders includes units that provide financial services exclusively with own funds or funds provided by a sponsor to a range of clients and incur the financial risk of the debtor defaulting. These types of units are often seen as lenders of last resort. As such, they typically charge higher rates of interest than other lenders, sometimes much higher. Therefore, it is useful to have separate data on these types of lending units, as a means of understanding financial fragilities in other sectors, especially the household sector. Increased recourse to these types of lenders may shed light on growing financial fragility in certain segments of the economy.

Insurance corporations

29.86 As noted in section C, insurance corporations tend to be significant in many economies. However, they have different lines of business with different risk profiles. Therefore, to better understand potential vulnerabilities in the two broad lines of business – non-life insurance (including reinsurance) and life insurance – separate supplementary data are recommended for the following:

- Non-life insurance corporations: Non-life insurance tend to face relatively more uncertainty than life insurance. Non-life insurance faces financial performance risk on its investment portfolio (reserves to meet claims) and inflationary risk which can erode the asset base and increase the costs of claims. However, the main risk for non-life insurance arises from the inability to accurately estimate future claims and expenses and therefore to properly set the premiums for such insurance risk. Re-insurance contracts help to spread this risk. While it may be possible to estimate the "rough likelihood" of say fire damage claims on insured property, this is not the case if these are triggered by any sort of natural disasters such as wildfires and earthquakes.

- Life insurance corporations: Life insurance claims involve a lower degree of uncertainty than non-life insurance claims. Future life insurance claims are relatively more straightforward to estimate by making use of statistical tools (e.g., morbidity tables, life expectancy and retirement by cohort groups, etc.). As a result, life insurance and its products primarily face financial investment performance risk. The main issues evolve around whether investments are sound and whether markets continue to generate sufficient returns to meet current and future claims. In this regard, inflation is also a risk which can reduce the value of their portfolio holdings and the income generated by these assets.

Pension funds

29.87 Pension funds hold substantial assets in many economies and these assets have grown over time. Pension funds can either be defined benefit or defined contribution schemes, depending on how the retirement benefits are determined. Both types of schemes primarily face investment/market risk. Good financial performance is important for all pension funds so that they can meet their current and future obligations. However, the parties that bear the overall risk are different between defined benefit and defined contribution schemes. Furthermore, in many countries the number of defined contribution plans are either larger than, or have begun to overtake, defined benefit pension schemes. Therefore, providing a supplementary breakdown between the two types of autonomous pension plans is increasingly important.

- Defined benefit pension funds provide levels of pension benefits to scheme members are determined by an actuarial formula related primarily to the participants' length of service and salaries, as well as by expected retirement ages, mortality rates, etc. This means that individual workers generally know how much they will receive in retirement. On the other hand, the sponsor of a defined benefit pension scheme undertakes the risk of financial performance of the accumulated assets. The sponsor might end up with an actuarial deficit on their pension fund, if the regular assessment of the viability of the fund to make current and future benefit payments indicates insufficient assets, giving rise to an underfunded pension funds which may need to be extinguished within a stated time frame. This type of actuarial liability is the responsibility of the sponsor and can create a financial burden on the sponsor. Under such a situation, employee contribution rates may also increase at some point, but the primary responsibility for the actuarial deficit generally remains with the sponsor/employer.

- Defined contribution pension funds are based on the contributions to the pension fund as well as the investment performance of the fund. The contributions to the scheme are not necessarily fixed, and the financial performance risk and general sufficiency of retirement saving risk is borne by the individual scheme member and can present a long-term financial stability risk for some households.

Table 29.1: Supplementary details for subsectors of financial corporations to capture non-bank financial intermediation (NBFI)

Money Market Funds (MMFs) into:
- Constant net asset value MMFs
- Variable net asset value MMFs

Non-MMF investment funds (non-MMFs) into:
- Open-ended funds
  - Real estate funds
  - Equity funds
  - Bond funds
  - Mixed or balanced funds
  - Hedge funds
  - Other open-ended funds
- Closed-ended funds
  - Real estate funds
  - Equity funds
  - Bond funds
  - Mixed or balanced funds
  - Hedge funds
  - Other closed ended funds

Other financial intermediaries (OFIs) into:
- Financial corporations engaged in securitisation of assets
- Security and derivative dealers
- Financial corporations engaged in lending or leasing
- Specialised financial corporations
- Central clearing counterparties

Captive financial institutions and money lenders into:
- Estate, trusts and agency accounts (ETAs)
- Corporate group's captive financial institutions
  Of which: SPEs
- Other captive financial institutions and money lenders

Insurance corporations into:
- Non-life insurance corporations
- Life insurance corporations

Pension funds into:
- Defined benefit pension funds
- Defined contribution pension funds

3. Further instrument breakdowns

29.88 The recommended details on financial instruments to better monitor and understand NBFI are confined to loans and financial derivatives (the latter discussed in more detail in chapter 25 on Selected issues in financial instruments). The supplementary details are as follows:

- Further details on loans: repurchase agreements, securities lending with cash collateral and margin lending. In the build-up to the global financial crisis that began in 2007-08, these instruments were often used to increase the leverage of specific units (using the liquid funds to buy assets that could then be used as collateral to raise more liquid funds, etc.). For that reason, it is important to have separate

information on these types of loans, assessing their impact on liquidity measures and analysing the degree to which financial corporations are involved in liquidity transformation and in creation of additional leverage.

- Additional details on loans: non-performing loans. As loans are recorded at nominal value, combining this with information on the amount of loans that are likely not going to be repaid, provides insight into the credit risk run by the relevant units, as well as a better perspective on the financial position and financial health of the economy.
- The market value of loan assets is also viewed as useful, but in the form of a supplementary item only for those jurisdictions that can compile such estimates.
- Financial derivatives information is important to monitor financial stability. For example, credit default swaps played a significant role during the global financial crisis that began in 2007-08. It is important to have data by risk category and sub-instrument, as well as by trading venue. The recommended breakdowns align with the ones put forward as standards and supplementary breakdowns in chapter 12 on Financial account and chapter 25 on Selected issues in financial instruments.

Table 29.2: Supplementary details for financial instruments to capture non-bank financial intermediation (NBFI)

Loans

Of which:

- Repurchase agreements
- Securities lending with cash collateral
- Margin lending

Of which:

- Non-performing loans (loan allowances)

Supplementary item: Market value of loan portfolio

Financial derivatives

- By market risk category
  - Foreign currency derivatives
  - Single-currency interest rate derivatives
  - Equity derivatives
  - Commodity derivatives
  - Credit derivatives
  - Other derivatives
- By instrument
  - Options
  - Forwards and related instruments (other than futures and swaps)
  - Futures
  - Swaps
  - Credit derivatives
  - Other and hybrid derivatives
- By trading venue and clearing status
  - Exchange traded
  - Over-the-counter (cleared)
  - Over-the-counter (not cleared)

E. Link to monetary and financial statistics

1. Introduction

29.89 Chapter 12 on Financial account and chapter 14 on Balance sheet describe the concepts and details of the financial accounts and the balance sheets, respectively. These chapters present the financial transactions and positions of each of the individual institutional sectors of the national economy as well as transactions and positions between residents and non-residents. These accounts are also closely related to the two components of the other changes in assets account (other changes in volume and revaluations) discussed in chapter 13 on Other changes in assets and liabilities account.

29.90 The information in the financial accounts and balance sheets is of analytical and policy interest in its own right and represents an important part of monetary and financial statistics. While the national accounts provide financial accounts and balance sheets for all sectors, among which the financial corporations' sector and subsectors, the monetary and financial statistics (MFS) are primarily concerned with stocks and flows of assets and liabilities of financial corporations only. Both sets of accounts for financial corporations are closely tied to each other. In some economies, the financial corporations' statistics in the SNA sequence of economic accounts are the source data for the MFS, whereas in others the MFS constitute source data for the financial accounts and balance sheets of the SNA sequence of economic accounts.

29.91 This section discusses the main similarities and differences between the SNA sequence of economic accounts and the MFS as set out in the *MFSMCG*. Further detail on monetary and financial statistics can be found in the *MFSMCG.* Other useful references include the *Eurostat Manual on Sources and Methods for the Compilation of ESA Financial Accounts,* the *ECB Monetary Financial Institutions and Market Statistic Manual* and in *FPFS.*

2. Coverage of institutional sectors and sequence of economic accounts

Sectors and subsectors

29.92 The SNA sequence of economic accounts covers all institutional sectors and subsectors of the economy, with the purpose of constructing an integrated set of accounts for transactions, other flows, and balance sheets, as well as a times series by institutional sector and subsector. This structure displays the interactions across sectors and subsectors that shed light on how the economy functions over time. The principal sectors include non-financial corporations; financial corporations; government; non-profit institutions serving households (NPISH); households; the national economy (as the aggregate of the preceding sectors); and the accounts for all flows and stocks between residents and non-residents, from the rest of the world perspective (otherwise understood as the balance of payments, where the perspective of the domestic economy is taken as a starting point). Corporations and governments have subsectors associated with them in significant detail. For non-financial corporations, the subsectors are: public, national private and foreign-controlled corporations. Government is split into central, state, and local levels, as well as social security funds (which can also be allocated to their level of government). In the case of the financial sector, it is disaggregated into nine unique subsectors, as already explained in section C above: central bank, other deposit-taking corporations except the central bank, money market funds (MMFs), non-MMF investment funds, other financial intermediaries except insurance corporations and pension funds, financial auxiliaries, captive financial institutions and moneylenders, insurance corporations, and pension funds.

29.93 The MFS puts the emphasis on the financial stocks and flows between key sectors of the economy and between resident institutional sectors and non-residents, with a special focus on financial corporations. As such, it defines and acknowledges the other institutional sectors as counterparts. Some reconcilable differences with SNA sequence of economic accounts exist. The counterpart sectors households and NPISHs are aggregated. General government subsectors' counterparts are split into central government and state government and local governments, with social security funds presented at the level of government at which they operate. The counterpart non-financial corporations are split between public and other.

29.94 More significant, but also reconcilable differences, exist for financial corporations. Deposit-taking corporations play an important role in the MFS statistics. The MFS financial corporations' sector is divided into three main subsectors: central bank, other depository corporations that combine deposit-taking

corporations except the central bank and money market funds (MMFs), and other financial corporations that combine the financial subsectors, from non-MMF investment funds to pension funds, in the SNA sequence of economic accounts (although the Euro area MFS contains some additional subsector details). For monetary policy purposes, the focus is on the consolidated data for other depository corporations. For broader macro-economic analysis, there is increasing focus on the consolidated data of other financial corporations. A final difference in subsector coverage is that offshore banks that do not issue liabilities in broad money (i.e., they only take deposits from non-residents) are classified with other financial corporations in MFS, whereas these are classified as deposit-taking corporations in the SNA sequence of economic accounts.

Sequence of economic accounts

29.95 The SNA sequence of economic accounts displays a complete set of transactions in the non-financial accounts (production account, earned income accounts, transfer income accounts, and capital account) as well as financial transactions and other flows for each category of financial assets and liabilities and for each of the institutional sectors and subsectors of the national economy and of the rest of the world. The sequence of economic accounts is completed by the opening and closing balance sheets (i.e., stocks of assets, non-financial as well as financial, and liabilities), which describes the result of a period's transactions and other flows on the assets, liabilities and net worth positions of each sector and subsector.

29.96 The MFS is focused on financial activity and positions of financial corporations, and only presents a partial sequence of accounts restricted to financial accounts, balance sheets, revaluations and volume changes. For each financial instrument, a set of entries equivalent to an asset account is shown, that is: opening stock, transactions, valuation changes, other changes in volume, and closing stock. Where the SNA sequence of economic accounts and MFS overlap, the accounts are identical. However, the quadruple entry accounting of the SNA sequence of economic accounts (the simultaneous application of vertical and horizontal entries) is not fully possible in monetary statistics, except in the case of pure financial transactions/positions that take place within the sectors covered by the monetary statistics.

Conceptual and accounting differences

29.97 For the most part, the SNA sequence of economic accounts and MFS follow the same principles. It can be stated that the basic accounting rules, concept of residence, time of recording (accrual accounting), and the classification of financial assets and liabilities are consistent between the SNA sequence of economic accounts and the *MFSMCG*. Nevertheless, there are some differences, with the main ones briefly discussed below.

Consolidation

29.98 The SNA sequence of economic accounts follows the principle of non-consolidated accounts, such that balance sheet positions as well as transactions and other flows are presented gross so as to match corresponding entries across the institutional sectors and categories. MFS adheres to this general principle but allows for some degree of consolidation in the financial corporations' sectors for monetary statistics' purposes. This entails the cancelling out of stocks and flows that arise from financial claims and corresponding liabilities among institutional units within the same subsector. The practice involves the three subsectors of the financial corporations' sector: central bank, other depository corporations, and other financial corporations. Unconsolidated data, however, are available.

Classification and breakdowns of financial instruments

29.99 Assets and liabilities are defined similarly for the most part; however, the level of detail can be different between the SNA sequence of economic accounts and MFS with MFS providing some additional details, reflecting the different uses of the two datasets. Some important differences are noted below.

Money measures

29.100 Money is very important as a financial variable. But the wide range of ways in which money is defined in different countries precludes a simple definition in the SNA sequence of economic accounts. The composition of broad money and other monetary aggregates varies widely across countries and encompasses many classes of deposits. In addition, many countries compile a range of money measures, as well as broad liquidity measures. Even within a single country, innovation, deregulation, or technical progress may cause definitions of broad money to shift over time in response to changes in financial instruments and the organization of money markets.

29.101 The *MFSMCG* offers a more elaborate discussion on money aggregates, focusing on the characteristics of the financial instruments that should be included as part of broad money. The countries have, nonetheless, the discretion to tailor the generic definition to the characteristics of their economy while still ensuring overall consistency in the measure of broad money. Although the specific components of broad money may vary across countries, in all cases the coverage of financial instruments included in broad money is used to identify those financial corporations that issue liabilities included in broad money. Such financial corporations are described as depository corporations.

29.102 The MFS presents currency deposits in more detail than the SNA sequence of economic accounts, for monetary policy purposes. In addition, the MFS requires a breakdown of all assets and liabilities (excluding equity) into domestic and foreign currency. The SNA sequence of economic accounts does not explicitly require this breakdown, although for certain calculations (e.g., holding gains and losses for items denominated in foreign currency in the revaluation account) this split is implied for compilers.

Interbank positions

29.103 In the SNA sequence of economic accounts, interbank positions are generally not shown as a separate category under the various financial instruments. The treatment is slightly different in the *MFSMCG*. Interbank (inter-depository corporations) positions are identified fully by all relevant instrument categories (except for equity). And when there is uncertainty between a loan and a deposit, it is recorded under other deposits.

Equity liability and net worth

29.104 In the SNA sequence of economic accounts, the equity liability of financial corporations is reported at market value or an approximation of this market value for unlisted equity. For the MFS, equity is valued at book value and is split into five components: funds contributed by owners, retained earnings, current year results, general and special reserves, and valuation adjustments.

29.105 In the SNA sequence of economic accounts, net worth is defined as the value of all of the assets owned by an institutional unit in a (sub)sector less the value of its outstanding liabilities (including equity). The MFS does not have a concept of net worth, although a partial net worth (referred to as financial net worth) can be calculated as the difference between financial assets and liabilities (including equity).

Provisions for loan losses

29.106 The treatment of provisions for loan losses is notably different between the SNA sequence of economic accounts and MFS, and both treatments have their distinct purposes. For simplification, the discussion below assumes that all loans are denominated in domestic currency.

29.107 Lending institutions calculate allowances against their loan portfolios, although there may be some instances where this practice is not followed. The "allowance account" is deducted from their loan assets in each period. The changes in the allowance account are typically led by "new provisions" against non-performing loans – that is, loans that are a specified number of days in arrears on principal/interest payments (criteria which can differ across economies). In other words, potential losses are accounted for on an accrual basis, consistent with financial accounting. Loan assets are thus written down reflecting "potential losses" as opposed to

"actual losses", or "write-offs" of the assets. The allowance represents an amount considered appropriate to cover estimated losses, with a matching appropriation from retained earnings to reserves on the other side of the ledger.

29.108 The allowance account may contain different types of entries, depending on what has transpired in any given period, which generates a closing balance different from the opening balance. These entries include new provisions (added) on any new non-performing loans, loan recoveries (deducted) if the loans begin generating payments again, loan write-offs (deducted) removed from the account. Write-offs are permanently removed from loans as a separate adjustment outside of the allowance account, though they are almost always initially accounted for in allowances (as part of non-performing loans) and must be reversed when the losses are realized. In this sense, the terminology is important: The balance item deducted from ongoing loan assets for non-performing loans is called "loan allowances" or "accumulated net provisions on loans". Likewise, the change in this balance is referred to as the "changes in the loan allowance account" or the "net new provision on loans". Both net new provisions and write-offs are expensed on the financial corporation's income statement, with write-offs automatically excluded from net provisions (as described above) to avoid double-counting.

29.109 The SNA does not follow the above accounting for these adjustments to loans. Income statement items related to net new provisions and write-offs are not picked up by national accountants for the non-financial accounts, as the provisions are not relevant in this context and write-offs are treated as volume changes. On the SNA balance sheet, accumulated net provisions (or allowances) on loans are ignored. This means that they are added back to the loan balances, and the loan assets are recorded at gross values less any write-offs. In the financial account, transactions are measured as the first difference of these loan balances. Alternatively, if the "net of allowances" source data are used to calculate the transactions, an adjustment is required to account for any changes in the allowance account between periods. More specifically, net new provisions (including write-offs) are added to the first difference of the loan balance to estimate transactions in loans. In the less common instances where loan allowances are not accounted for in the source data, transactions would be measured as the first difference of the loan balances plus write-offs in the period.

29.110 In some jurisdictions, SNA source data may only provide the loans net of allowances with no explicit allowance account. Sometimes the allowance account may only be available annually (and with a lag) from the complete balance sheet statements, but the net provisions on the income statement are usually available quarterly. In these cases, quarterly estimates of the allowance account will have to be made of gross loans by summing the net new provisions for each period. Transactions would then be calculated as described above.

29.111 The SNA treatment can be summarized as follows: loans are shown gross of accumulated provisions or allowances, but write-offs are deducted from loans and shown on the other changes in the volume of assets account; and transactions are adjusted for differences. This treatment has the advantage of reconciling debtor and creditor balances/transactions across the sectors of the economy. Having said that, loan allowances or accumulated net provisions are recommended as a memorandum item in the SNA.

29.112 The MFS has the same treatment as the SNA for write-offs. However, provisions are treated somewhat differently in the MFS. Loan assets are also valued at nominal value and are shown gross, but net accumulated provisions are accounted for as a liability on the balance sheet and recorded under other accounts payable (with a volume change offset in equity). This MFS treatment has the advantage of recognizing the provisions, but this approach is not feasible in the SNA given its requirement to balance all assets and liabilities (in this case, loans and other receivable/payables by creditor and debtor) by instrument across the institutional sectors. However, the SNA does recommend compiling supplementary items on provisions; see chapter 14 on Balance sheet.

Chapter 30: General government and the public sector

A. Introduction

30.1 A major strength of the integrated framework of the SNA is the ability to compile accounts for whole sectors, individual units, or some intermediate levels and to aggregate the accounts in different ways. Disaggregating the economy into various sectors and subsectors makes it possible to observe and analyse the interactions between the different parts of the economy for purposes of policymaking. Particular interest is given to the general government sector, as defined in chapter 5 on Institutional units and sectors, economic territory and residence, and the public sector, as defined in this chapter. Many of the concepts in this chapter have been described in a number of previous chapters. This chapter aims to bring these together, give some more elaboration on how they might be put into practice and gives a link to other systems of economic statistics particularly aimed at government such as the *GFSM*, Eurostat's *Manual on Government Deficit and Debt*, and the *External Debt Statistics Guide for Compilers and Users*.

30.2 The powers, motivation and functions of government are different from those of other sectors. Governments use their powers to pass laws affecting the behaviour of other economic units. They are able to redistribute income and wealth largely by means of taxes, social contributions and social benefits. The accounts for the general government sector show how goods and services provided to the community as a whole or to individual households are financed mainly by revenue raised. The range of goods and services the government provides, and the prices charged are based on political and social considerations rather than on profit-maximization.

30.3 Fiscal operations are carried out by the government and financed through the budget under the usual budgetary procedures. However, some operations directed by government units may be carried out by units outside the legal government framework, including public corporations. Quasi-fiscal operations are government operations carried out by institutional units other than general government units.

30.4 Operations related to privatization and restructuring public corporations, securitization of assets using the intervention of special purpose units, including those abroad, may be described in this way. Though such operations are not reported in the budget and might escape the usual control procedures, they may have a significant impact on government revenue, expenditure and debt.

30.5 As well as providing services directly, governments often fulfil their public policy objectives through public corporations (for example, railways, airlines, public utilities and public financial corporations). A public corporation may be required to provide services to areas of the economy that would not be covered otherwise by means of subsidized prices. As a result, the public corporation may operate with a reduced profit or at a loss.

30.6 To analyse the full impact of government on the economy, it is, therefore, useful to form a sector consisting of all the units of general government and all public corporations. This composite sector is referred to as the public sector.

30.7 For the general government sector and the public sector, in addition to the usual sequence of economic accounts of the SNA, the accounts can be presented in a manner that is more suitable for government finance analysts and policymakers. The latter increasingly use aggregates and balancing items defined in terms of the concepts, definitions, classifications and accounting rules of the integrated framework of the SNA so that these aggregates can be related to other macroeconomic variables and compared with the same items in other countries. Some of these items, such as saving and net lending or borrowing, are already available in the sequence of economic accounts. Other items, such as total revenue, total expense and total outlays, the tax burden, the net operating balance and total debt, do not appear as such in the SNA sequence of economic accounts. Aggregates and balancing items of this nature can be used to assess the use of resources to produce individual and collective services, the need to collect taxes and other revenues, the ability of government to borrow and repay debt and the sustainability of the desired level of government operations.

30.8 The present chapter gives an overview of this so-called public finance or government finance presentation of the accounts. In this presentation, the transactions in the SNA current and capital accounts are rearranged to derive aggregates and balancing items of specific interest to the general government and public sectors. For

example, a combination of taxes, social contributions, grants from other governments and other revenue items can be aggregated to form total revenue, as the amount available from operations to fund government services.

30.9 Section B summarizes the identification of government units and other units controlled by government units and explains how those units are grouped into sectors in the SNA sequence of economic accounts. Section C describes the presentation of government finance statistics. Section D addresses accounting issues that are unique to, or exceptionally important for, government. Section E shows how information about the public sector may be prepared in a manner roughly parallel to the government finance statistics presentation described in section D. Finally, section F discusses the links to International Public Sector Accounting Standards (IPSAS).

1. Data sources

30.10 In practice, macroeconomic accounts can seldom be built up by simply aggregating the relevant microdata. Government is an exception in that the statistics for government units and public corporations are often derived directly from the microdata in government financial accounting databases. As a result, compilers of statistics for the government units and public corporations usually draw more heavily on accounting information than on the results of statistical enquiries. In particular, the development of International Public Sector Accounting Standards (IPSAS) by the International Public Sector Accounting Standards Board of the International Federation of Accountants has increased the need for clear guidance on the compilation of government finance statistics so that the detailed accounting data can be transposed correctly into the integrated framework of the SNA. Such guidance is especially important when the government's accounts are compiled on a cash basis and must be converted to an accrual basis to comply with the accounting basis of the integrated framework of the SNA.

2. Consolidation

30.11 As a rule, the entries in the SNA sequence of economic accounts are not consolidated. Consolidation involves the elimination of those transactions or debtor/creditor relationships that occur between two transactors belonging to the same institutional sector or subsector. As stated in chapter 4 on Flows, stocks and accounting rules, however, consolidation may be relevant for the general government sector. For example, information on debt owed by government units to units outside the general government sector may be more relevant than gross figures that include debt owed to other government units. Consolidation in *GFSM* and the SNA is discussed in Section C.

B. Defining the general government and public sectors

30.12 General government units include non-market producers controlled by government, while the public sector comprises all institutional units controlled, directly or indirectly, by government. The public sector can be separated into general government units and public corporations. Public corporations are market producers, which are institutional units that provide all or most of their output to others at prices that are economically significant. To identify which units are included in general government, the conditions for control by government and for prices to be considered economically significant must be identified. To determine whether a unit controlled by government is a public corporation or part of general government, it is necessary to determine whether or not it charges economically significant prices.

30.13 To identify the units falling in the general government sector, it is helpful to begin by restating the definition of government units given in paragraphs 5.175 and 5.176. The discussions of what is meant by control by government and by economically significant prices follow.

1. Government units

30.14 Government units are unique kinds of legal entities established by political processes that have legislative,

judicial or executive authority over other institutional units within a given area. Viewed as institutional units, the principal functions of government are to assume responsibility for the provision of goods and services to the community or to individual households and to finance their provision out of taxation or other resources, to redistribute income and wealth by means of transfers, and to engage in non-market production. In general terms:

a. A government unit usually has the authority to raise funds by collecting taxes or compulsory transfers from other institutional units. A government unit must have funds of its own either raised by taxing other units or received as transfers from other government units, and it must have the authority to disburse some, or all, of such funds in the pursuit of its policy objectives. It typically is also able to borrow funds on its own account.

b. Government units typically make three different kinds of final outlays:

- The first group consists of actual or imputed expenditures on the free provision to the community of collective services such as security and defence, the maintenance of law and order, provision of public infrastructure for transport, the protection of environment, etc. that are organized collectively by government and financed out of general taxation and other government income or borrowing.
- The second group consists of expenditures on the provision of goods or services free, or at prices that are not economically significant, to individual households such as publicly provided health care and education. These expenditures are deliberately incurred and financed out of taxation and other government income or borrowing by government in the pursuit of its social or political objectives, even though individuals could be charged according to their usage.
- The third group consists of transfers paid to other institutional units, mostly households, to redistribute income or wealth, such as social security and social assistance benefits.

30.15 Within a single territory there may be many separate government units when there are different levels of government, specifically central, state, and local governments. In addition, social security funds constitute government units.

30.16 In all countries, there is an institutional unit of the general government sector distinguished by its importance in terms of size and power, particularly the power to exercise control over many other units. This unit is often referred to as the national government and is the unit covered by the main budget account. It is a single unit of the central government that encompasses the fundamental activities of the national executive, legislative and judiciary powers. Its revenues, as well as its expenses and expenditures are normally regulated and controlled by a Ministry of Finance or its functional equivalent and by a general budget approved by the legislature. Most of the ministries, departments, agencies, boards, commissions, judicial authorities, legislative bodies and other units that make up this central government unit are part of the primary central government unit, not separate institutional units. This is because they generally do not have the authority to own assets, incur liabilities, or engage in transactions in their own right. If there are state or local governments, it is likely that each of these governments will also have a primary government unit that includes the principal executive, and, possibly, legislative and judicial powers.

30.17 In addition, there may be government units with a separate legal identity and substantial autonomy, including discretion over the volume and composition of their expenses and outlays and a direct source of revenue, such as earmarked taxes. (The terms expense, outlay and revenue are commonly used in the presentation of government accounts. Their definitions and relationship to concepts applied in the integrated framework of the SNA are covered in section C.) Such units are often established to carry out specific functions, such as road construction or the non-market production of health or education services. These units should be treated as separate government units if they maintain full sets of accounts, own goods or assets in their own right, engage in non-market activities for which they are held accountable at law, and are able to incur liabilities and enter into contracts in their own right. Such units are often referred to as extrabudgetary units because they have separate budgets and any transfers from the main budget account are supplemented by their own sources of revenue. Budget practices vary widely among countries and various terms are often used to describe these units. These units are classified in the general government sector to the extent that they are non-market producers and are controlled by another government unit.

30.18 A social security fund is a particular kind of government unit that is devoted to the operation of one or more social security schemes. A social security fund must satisfy the general requirements of an institutional unit – that is, it must be separately organized from the other activities of government units, hold its assets and liabilities separately and engage in financial transactions on its own account.

30.19 As noted earlier, non-market producers that are controlled directly or indirectly by one or more government units are also units of the general government sector. Even if they are legally established to be independent from government, they are considered to be carrying out government policies and are effectively part of government. Governments may choose to use non-profit institutions or other legal entities rather than government agencies to carry out certain government policies. For example, research and development, and the setting and maintenance of standards in fields such as health, safety, the environment and education are areas in which such units may be more effective than government agencies.

30.20 Units engaged in financial activities need special consideration. As described in paragraphs 5.94 to 5.96, a unit set up by government with functions similar to a captive financial institution is treated as an integral part of general government and not as a separate unit if it has no powers to act independently, is restricted in the types of transactions that it can engage in, does not carry the risks and rewards associated with the assets and liabilities it holds, and is resident in the same economy. If the unit is non-resident, it is treated as a separate unit but the transactions it undertakes as quasi-fiscal operations and the related positions it holds are mirrored in imputed transactions and positions of the controlling government. In particular, if the non-resident unit borrows abroad, it is regarded as lending the same amount to government and on the same terms.

30.21 At the same time, the general budget of any government level might control market producers satisfying the criteria to be a quasi-corporation as defined below. These units should not be classified in the general government sector, but in the non-financial or financial corporations' sector, as appropriate. As public units, they are, however, part of the public sector.

2. NPIs controlled by government

30.22 Control by government is one of the requirements for an NPI to be treated as a government unit. The other, operating as a non-market producer, is discussed below. The criteria for deciding whether an NPI is controlled by government or not are described in paragraph 5.131.They are summarized here for convenience.

30.23 Control of an NPI is defined as the ability to determine the general policy or programme of the NPI. All NPIs allocated to the general government sector should retain their identity as NPIs in statistical records, to facilitate analysis of the complete set of NPIs. To determine if an NPI is controlled by the government, the following five indicators of control should be considered:

a. The appointment of officers;

b. Other provisions of the enabling instrument;

c. Contractual agreements;

d. Degree of financing by government; and

e. Risk exposure.

A single indicator could be sufficient to establish control in some cases but sometimes a number of separate indicators may collectively indicate control. A decision based on the totality of all indicators will necessarily be judgmental in nature, but the judgements should be consistent for similar cases.

3. Corporations controlled by government

30.24 To be classified as a public corporation, a corporation must both be controlled by another public unit, and satisfy the criteria to be a market producer. Control is defined as the ability to determine the general policy or program of an institutional unit. Government is in a position to exercise control over many kinds of units: miscellaneous extrabudgetary agencies, non-profit institutions and corporations (non-financial or financial). The criteria for control of a corporation are described in paragraphs 5.115 to 5.119. The key factors to be

considered are

a. Ownership of the majority of the voting interest;

b. Control of the board or other governing body;

c. Control of the appointment and removal of key personnel;

d. Control of key committees of the unit;

e. Golden shares and options;

f. Regulation and control;

g. Control by a dominant customer or group of customers; and

h. Control attached to borrowing from the government.

Although a single indicator could be sufficient to establish control in some cases, in other cases a number of separate indicators may collectively indicate control. A decision based on the totality of all indicators must necessarily be judgmental in nature, but the judgements should be consistent for similar cases.

4. Economically significant prices

30.25 In addition to the test of control by a government, a test of whether the unit operates as a non-market producer is necessary to determine whether it is a general government unit or a public corporation. Units controlled by another public sector unit that operate as market producers are classified as public corporations.

30.26 To be considered a market producer, a unit must provide all or most of its output to others at prices that are economically significant. ***Economically significant prices are prices that have a significant effect on the amounts that producers are willing to supply and on the amounts purchasers wish to buy.*** These prices normally result when:

a. The producer has an incentive to adjust supply either with the goal of making a profit in the long run or, at a minimum, covering capital and other costs; and

b. Consumers have the freedom to purchase or not purchase and make the choice on the basis of the prices charged.

30.27 These conditions usually mean that prices are economically significant if sales cover the majority of the producer's costs and consumers are free to choose whether to buy and how much to buy on the basis of the prices charged. Although there is no prescriptive numerical relationship between the value of output (excluding both taxes and subsidies on products) and the production costs, one would normally expect the value of goods and services sold (the sales) to average at least half of the production costs over a sustained multiyear period. However, for financial public corporations, this test is generally not applicable because property income and holding gains tend to be very important for financial institutions.

30.28 Because economic circumstances vary considerably, it may be desirable to accept different thresholds to achieve consistent economic measurement over time, between units and across countries. In principle, the distinction between market and non-market should be made on a case-by-case basis.

30.29 It can be presumed that prices are economically significant when the producers are private corporations. When there is public control, however, the unit's prices may be modified for public policy purposes. This may cause difficulties in determining whether the prices are economically significant. Public corporations are often established to provide goods that the market would not produce in the desired quantities or at the desired prices. Even when the sales of such corporations cover a large portion of their costs, one can expect that they respond to market forces quite differently than would private corporations.

30.30 It is likely that corporations receiving substantial government financial support, or that enjoy other risk reducing factors such as government guarantees, will act differently from corporations without such advantages because their budget constraints are softer. A non-market producer is a producer that faces a very soft budget constraint so that the producer is not likely to respond to changes in the economic conditions in the same way as market producers.

Suppliers of goods and services to government

30.31 The question arises whether government-controlled units supplying goods and services to government should be treated as market or non-market producers. The supplier of the goods and services to government is not a market producer if it is a dedicated provider of ancillary services. Dedicated providers of ancillary services generally do not satisfy the criteria to be institutional units. It can also be presumed that the producer is not a market producer if the unit provides the goods and services in the absence of competition with private producers and the choice of supplier is not based on price. This is true regardless of whether the supplier is the only supplier and whether the government is the only customer of the supplier.

Definition of sales and costs

30.32 To assess whether a producer is a market producer, it is necessary to carry out a comparison between the receipts from sales and the production costs of the products. Sales are measured before any taxes applicable to the products are added. Sales exclude all payments received from government unless they would be granted to any producer undertaking the same activity. Own account production is not considered as part of sales in this context.

30.33 Production costs are the sum of intermediate consumption, remuneration of employees, other taxes on production, rent payable on the use of (rented) non-produced assets, depreciation (and depletion if relevant), and a net return to capital used in production. Subsidies on production are not deducted.

5. A decision tree for public units

30.34 Figure 30.1 shows the relationship between the general government sector, the public sector and the other main sectors of the domestic economy.

30.35 As explained in paragraph 5.175 government units are established by political processes and have legislative, judicial or executive authority over other institutional units within a given territory. These units belong to the general government sector and so to the public sector also. In order to determine which other institutional units belong to the general government sector and which to the public sector, the decision tree described in figure 5.1 should be followed, using the following sequential questions:

a. Is the unit of interest an institutional unit? If it is not, but is resident, then it is treated as part of the unit that controls it. If it is not an institutional unit but is non-resident, it is treated as a quasi-corporation in the economy in which it is resident.

b. Is the unit controlled by government or another public corporation?

c. Is the unit a market or non-market producer according to the criteria given immediately above?

30.36 The answers to the last two questions lead to allocations to sectors as follows:

a. If the unit is a market producer and not controlled by government, it is a part of neither the general government sector nor the public sector.

b. If the unit is a market producer and controlled by government or another public corporation, it is not part of general government but is part of the public sector.

c. If the unit is a non-market producer and controlled by government, it is part of the general government sector and the public sector.

d. If the unit is a non-market producer but not controlled by government, it is treated as a non-profit institution serving households (NPISH). It is a part of neither the general government sector nor the public sector.

e. Even though the central bank is a non-market producer, it is not part of the general government sector but it is part of the public sector.

Figure 30.1: The public sector and its relation to institutional sectors

<table>
<tr><th>Non-financial corporations</th><th>Financial corporations</th><th>General government</th><th>NPISHs</th><th>Households</th></tr>
<tr><td>Public</td><td>Public</td><td rowspan="2">Public</td><td rowspan="2">Private</td><td rowspan="2">Private</td></tr>
<tr><td>Private</td><td>Private</td></tr>
</table>

6. Subsectors of the general government sector

30.37 As described in chapter 5 on Institutional units and sectors, economic territory and residence, the general government sector may be sub-sectored in either of two ways. One method is to have up to three subsectors; one for central government, one for state government and one for local government, with social security included at any level where relevant. In some cases, there may be only one or two levels of general government, and in some cases more levels of government must be accommodated within the three-level structure. The other method of sub-sectoring is to exclude social security funds from each level of government and have a separate subsector for social security funds covering all levels of government. The choice of classification will depend on whether social security funds are independent of the level of government where they operate or not.

30.38 Greater detail on sub-sectoring general government is given in section F of chapter 5.

7. Subsectors of the public sector

30.39 It is possible to construct subsectors of the public sector to meet analytical demands. Two methods of sub-sectoring the public sector may be considered. In the first, the public sector could be divided into the general government sector as one subsector and the aggregate of all public corporations as a second subsector. Further detail could also be provided by dividing general government into detailed subsectors of central government, state government, local government and social security funds, and public corporations might be further divided into non-financial public corporations, financial public corporations other than the central bank, and the central bank. An "of which" breakout of the public corporations that are part of a domestic multinational enterprise group might also be provided.

30.40 Secondly, the public sector could be divided by the geographical level of the authority in the same way as the general government sector is. In this case, the subsectors would be the central government public sector, the state government public sector, and the local government public sector. Each of these subsectors would consist of the corresponding subsector of the general government sector plus all public corporations controlled by a unit of that level of government. If a unit is controlled in part by a unit at one level of government and in part by a unit at another level of government, an allocation must be made to one or the other level of government depending on factors such as the degree of control exercised by each of the controlling units. Social security funds could form a separate subsector or could be combined with each level of government. It should be noted that if there is a separate fund to meet government employee pensions, this fund should be excluded from social security funds.

8. Borderline cases

30.41 Specific guidance on when certain units created by government units are to be included in the public sector or not is needed. The units concerned include quasi-corporations, restructuring agencies, special purpose units, joint ventures, supranational authorities, and trusts.

Quasi-corporations

30.42 Quasi-corporations are unincorporated enterprises that function as if they were corporations. Quasi-corporations are treated in the SNA sequence of economic accounts as if they were corporations: that is, as institutional units separate from the units to which they legally belong. Thus, quasi-corporations owned by government units are grouped with corporations in the non-financial or financial corporate sectors.

30.43 The intent behind the concept of a quasi-corporation is to separate from their owners those unincorporated enterprises that are sufficiently self-contained and independent of their owners that they behave in the same way as corporations. If they function like corporations, they must keep complete sets of accounts. Indeed, the existence or possibility to construct a complete set of accounts, including balance sheets, for the enterprise is a necessary condition for it to be treated as a separate institutional unit, otherwise it would not be feasible from an accounting point of view to distinguish the quasi-corporation from its owner.

30.44 In order to be treated as a quasi-corporation the government must allow the management of the enterprise considerable discretion not only with respect to the management of the production process but also the use of funds. Government quasi-corporations must be able to maintain their own working balances and business credit and be able to finance some or all of their capital formation out of their own saving, financial assets or borrowing. The ability to distinguish flows of income and capital between quasi-corporations and government implies that, in practice, their operating and financing activities must be separable from government revenue or finance statistics, despite the fact that they are not separate legal entities. The net operating surplus of a government-owned quasi-corporation is not a component of government revenue and the accounts for government record only the flows of income and capital between the quasi-corporation and government.

The case of restructuring agencies

30.45 Some public units are involved in the restructuring of corporations, either non-financial or financial. These corporations may or may not be controlled by government. Restructuring agencies may be long-standing public units or agencies created for this special purpose. Government may fund the restructuring in various ways, either directly, through capital injections (capital transfer, loan or acquisition of equity) or indirectly, through granting guarantees. Units such as restructuring agencies have little output so the usual criterion of whether the output is market or non-market in determining when the unit is part of general government is not sufficient. Instead, the following propositions should be considered:

a. A unit that serves only government is more likely to be included in general government than one that deals with other units as well.

b. A unit that sells financial assets at other than market values is more likely to be in the general government sector than not.

c. A unit that takes on low risk because it acts with strong public financial support and legally or effectively on behalf of the government is included within general government.

30.46 Restructuring agencies may operate in a number of ways. The following are two frequently observed examples.

30.47 A restructuring agency may undertake the reorganization of the public sector and the indirect management of privatization. Two cases may be considered:

a. The restructuring unit is a genuine holding company controlling and managing a group of subsidiaries and only a minor part of its activity is dedicated to channelling funds from one subsidiary to another on behalf of the government and for public policy purposes. The unit is classified as a corporation and the transactions made on behalf of the government should be rerouted through the general government.

b. The restructuring unit, whatever its legal status, acts as a direct agent of the government and is not a market producer. Its main function is to redistribute income and wealth, channelling funds from one unit to the other. The restructuring unit should be classified in the general government sector.

30.48 Another example of a restructuring agency is one mainly concerned with impaired assets, mainly in a context

of a banking or other financial crisis. Such a restructuring agency must be analysed according to the degree of risk it assumes, considering the degree of financing of the government. Again, two cases may be considered:

a. The restructuring agency borrows on the market at its own risk to acquire financial or non-financial assets that it actively manages. In this case the unit should be classified as a unit in the financial corporations' sector.

b. The restructuring agency deliberately purchases assets at above market prices with direct or indirect financial support from the government. It is primarily engaged in the redistribution of income (and wealth), does not act independently of government or place itself at risk and therefore should be classified in the general government sector.

Special purpose units

30.49 Government units are always considered resident because, by definition, the economic territory of a country consists of the geographic territory administered by a government, as well as some territorial enclaves in the rest of the world, used by the government for diplomatic, military, scientific, or other purposes, normally with the formal agreement of the government of the country in which they are physically located. These enclaves are part of the general government sector.

30.50 Governments may set up special purpose units, such as special purpose vehicles, or similar resident units, for financial convenience, the special purpose unit being involved in fiscal or quasi-fiscal activities (including securitization of assets, borrowing, etc.). Resident special purpose units that function in only a passive manner relative to general government and that carry out fiscal activities are not regarded as separate institutional units in the SNA sequence of economic accounts, and are treated as part of general government regardless of their legal status. If they act independently, acquire assets and incur liabilities on their own behalf, accepting the associated risk, they are treated as separate institutional units and are classified to sector and industry according to their principal activity.

30.51 Non-resident special purpose units are referred to as special purpose entities (SPEs), as explained in paragraph 5.81. SPEs are always classified as separate institutional units in the economy where they are established. When such units have been created, care must be taken to reflect faithfully the fiscal activities of the government. All flows and positions between the general government and the non-resident special purpose unit (SPE) should be recorded in the accounts for general government and the rest of the world.

30.52 A government may create an SPE to undertake government borrowing or incur government outlays abroad. Even if there are no actual economic flows recorded between the government and the SPE related to these fiscal activities, transactions should be imputed in the accounts of both the government and the rest of the world to reflect the fiscal activities of the government undertaken through the SPE. Borrowing by the SPE is mirrored by an imputation of borrowing by the government from the SPE on the same terms and via the same type of financial instrument, and an associated increase in the government's equity in the SPE. Interest payments made by the SPE are treated as funded by interest received from the government. The expenditures of the SPE are re-routed through the government, and the imputed government expenditures have the same nature and counterparty (e.g., capital transfers to public corporations) as the actual expenditures of the SPE. Finally, any revenues of the SPE (e.g., fees from securitizations) are also rerouted through the government. (The special case of securitization units is discussed in section D.)

Joint ventures

30.53 Many public units enter into arrangements with private units or other public units to undertake a variety of activities jointly. The activities could result in market or non-market output. Joint operations can be structured broadly as one of three types: jointly controlled units, referred to here as joint ventures; jointly controlled operations; and jointly controlled assets.

30.54 A joint venture involves the establishment of a corporation, partnership or other institutional unit in which each party legally has joint control over the activities of the unit. The units operate in the same way as other

units except that a legal arrangement between the parties establishes joint control over the unit. As an institutional unit, the joint venture may enter into contracts in its own name and raise finance for its own purposes. A joint venture maintains its own accounting records.

30.55 The principal question to be considered here is how to determine whether the effective economic control of the joint venture establishes a public or a private unit. If a joint venture operates as a non-market producer, it must be the case that government is in effective control and the joint venture is classified as part of general government.

30.56 If the joint venture is a market producer, it is treated as a public or private corporation according to whether it is or is not controlled by a government unit, using the same indicators as described above. Normally, the percentage of ownership will be sufficient to determine control. If, however, the public and private units own an equal percentage of the joint venture, the other indicators of control must be considered.

30.57 Public units can also enter into joint operating arrangements that do not involve establishing separate institutional units. In this case, there are no units requiring classification, but care must be taken to ensure that the proper ownership of assets is recorded and any sharing arrangements of revenues and expenses are made in accordance with the provisions of the governing contract. For example, two units may agree to be responsible for different stages of a joint production process or one unit may own an asset or a complex of related assets but both units agree to share revenues and expenses.

Supranational authorities

30.58 Countries may be part of an institutional agreement that involves monetary transfers from the member countries to the associated supranational authority and vice versa. The supranational authority also engages in non-market production. In the integrated framework of national accounts of the member countries, the supranational authorities are non-resident institutional units that are part of the rest of the world and may be classified in a specific subsector of the rest of the world.

30.59 Because the supranational authority is fulfilling the functions of a level of government, it is possible to construct a set of accounts for the authority as if it were a resident unit of the member country even though it remains non-resident. Such an additional account may provide a useful supplement for the analysis of the economic activities of the member countries.

Trusts

30.60 Government and public sector units may create trusts. The trustees they name may, or may not, be part of the public sector. Furthermore, depending on the country's legal framework, the trust might be constituted as a private unit even when the risks and rewards remain with a government or public sector unit. Determining the sector classification of the trusts created by government or public sector units may require a case-by-case application of the tests for whether a trust or similar fund is an institutional unit, as shown in the decision tree of figure 5.2 in chapter 5 on Institutional units and sectors, economic territory and residence, and a test of whether the unit is a market or non-market producer.

C. The government finance presentation of statistics

1. Introduction

30.61 The sequence of economic accounts for all institutional units and sectors is described in chapters 7 to 14. For the general government sector and, in some cases, the public sector, experience has shown that an alternative presentation, usually known as a government finance presentation or public finance presentation, of the stocks and flows is better suited to fiscal analysis. This section gives a very brief overview of the way in which government accounts are presented in the *GFSM* and of that presentation's conceptual differences from the integrated framework of the SNA. The *GFSM* should be consulted for further explanation and discussion.

30.62 Basically, the government finance presentation consists of transactions that increase net worth leading to an aggregate called "revenue" and transactions that decrease net worth, leading to the aggregate called "expense". In addition, there are two main balancing items, "net operating balance", and "net lending or net borrowing". Additional accounts can be shown for other economic flows and balance sheets.

30.63 The following section provides general information about the concepts involved in government finance.

2. Revenue

30.64 A revenue transaction is one that increases net worth. In the government finance presentation of the accounts, the concept of revenue is defined to include all revenues acquired by government as recorded in the SNA current accounts and capital transfers receivable recorded in the capital account. Specifically, revenue can be determined as follows:

Revenue

equals taxes

plus social contributions

plus other current revenues

plus capital transfers receivable.

30.65 Government revenue is usually dominated by compulsory levies in the form of taxes and social contributions. For some levels of government, grants (transfers from other government units and international organizations) are a major source of revenue. Other general categories of revenue include fines, penalties, and forfeits, property income, sales of goods and services and miscellaneous transfers other than grants.

30.66 An advantage of the government finance presentation is that all taxes can be presented as one category of revenue, with subclassifications according to the basis on which the tax was levied. In particular, both current and capital taxes can be shown under a single heading. In the SNA, taxes are recorded in several of the accounts in the sequence of economic accounts. The problems involved in estimating taxes and social contributions and their solutions are described in section D.

30.67 Other current revenue covers property income, sales of goods and services, fines, penalties and forfeits, voluntary transfers other than grants and premiums, fees, and claims related to non-life insurance and standardized guarantee schemes. The distribution of goods and services that are not sold at all, or sold for prices that are not economically significant, does not accord with the general notion of revenue as a transaction that increases net worth. As a result, only actual sales of goods and services, or goods and services produced by government but provided as remuneration in kind of employees are included in revenue. (The goods and services provided as compensation in kind are treated as revenue because they offset expenditure.)

30.68 Transfers from one government unit to another, often from the central or a state government to a lower level of government, can be quite important sources of government revenue. The government finance presentation allows all of these receipts to be collected into a separate category of revenue, usually labelled grants. Other transfers, including subsidies, normally amount to much less and are reported separately. Property income may or may not be an important source of revenue, but in either case, it relates directly to the same category as in the allocation of earned income account except for the interest payable to financial intermediaries that is treated as implicit financial services on loans and deposits in the national accounts presentation but not in the *GFSM* presentation.

3. Expense

30.69 An expense transaction is one that decreases net worth. In the government finance presentation of the accounts, the concept of expense is defined to include all expenditures incurred by government as recorded in the SNA current accounts and capital transfers payable as recorded in the capital account. Specifically, expense can be determined as follows:

Expense

equals production expenses (remuneration of employees, intermediate consumption and depreciation)

plus interest payable

plus subsidies

plus grants

plus social benefits,

plus other current expenses

plus capital transfers payable.

30.70 Many of the differences between the government finance presentation and the SNA sequence of economic accounts involve expenses. (See *GFSM 2014*, Appendix 7, for a general discussion of these differences.) The absence of a production account in the government finance presentation makes it impossible to show both the cost structure of own-account production and its final use. For instance, the salaries of employees engaged in own-account capital formation are directly classified as gross capital formation and not as remuneration of employees. Conversely, the salaries of employees who produce social benefits in kind are recorded as remuneration of employees and not again as (part of) expense on social benefits in kind. The government finance presentation also uses some labels and definitions that differ from those in the SNA sequence of economic accounts and introduces various simplifications. For example, outlays on implicit financial services on loans and deposits and insurance services are not distinguished from interest and insurance premiums less service charges respectively.

30.71 Governments typically produce many services and some goods and then distribute them free or at prices that are not economically significant. In the integrated framework of the SNA, the costs of these goods and services is recorded as a use when they are produced and again as a social benefit or final consumption expenditure when they are distributed. These costs are recorded only as production expenses in the government finance presentation to avoid unnecessary duplication.

30.72 In the *GFSM* presentation, pension benefits paid to retired government employees and their survivors are considered liquidations of pension liabilities rather than a current expense. They are therefore not included in social benefits. Similarly, social contributions, including employers' actual and imputed social contributions, payable by participant to autonomous and non-autonomous pension funds, are recorded as an incurrence of liabilities for future pensions and other retirement benefits. As a consequence, the item for the adjustment in the change in pension (and non-pension) entitlements that the SNA sequence of economic accounts adds when calculating saving is not needed in the *GFSM* calculation of the net operating balance. However, employers' social contributions to pension schemes are also recorded as an expense (as part of remuneration of employees) in the *GFSM* presentation.

4. Net operating balance

30.73 The net operating balance is defined as revenue less expense. It is the balance of all transactions that affect net worth. It is equivalent to net saving plus capital transfers in the SNA sequence of economic accounts. It provides a measure of the sustainability of government policies as it represents the resources acquired or consumed by the government's current operations. Specifically:

Net operating balance

equals revenue

minus expense.

5. Transactions in non-financial assets

30.74 The purchase of a non-financial asset is not an expense because it has no effect on net worth. It represents the exchange of one type of asset for another or the incurrence of a liability matched by the acquisition of an asset. All transactions that increase a unit's holdings of non-financial assets are labelled acquisitions in the

GFSM. and transactions that decrease a unit's holdings of non-financial assets are labelled disposals. Thus:

Net investment in non-financial assets

*equal*s acquisitions of non-financial assets

minus depreciation (in *GFSM 2014* labelled as "consumption of fixed capital")

minus disposals of non-financial assets.

6. Net lending or net borrowing

30.75 Net lending or net borrowing can be calculated as the net operating balance less the net investment in non-financial assets. It represents the amount the government has available to lend or must borrow to finance its non-financial operations. Specifically:

Net lending or net borrowing

equals net operating balance

minus net investment in non-financial assets.

30.76 Net lending or net borrowing is also the balancing item of the financial account, although in practice a statistical discrepancy could appear as a result of using different sources and of possible errors and omissions.

7. Consolidation

30.77 For analytical purposes, there is often interest in the relationship between net lending or net borrowing and the change in government liabilities. Attention to government liabilities usually centres on the amount owed to non-government units or abroad. There may be a substantial amount of liabilities incurred by one government unit and held by a second government unit. The government finance presentation consolidates all flows and stocks within each subsector and sector, and thus all asset and liability positions between units belonging to the same grouping are eliminated. This procedure still allows the separate identification of the debt of the general government sector, the central government subsector and the public sector, which are analytically useful.

30.78 Consolidation is a method of presenting statistics for a set of units as if they constituted a single unit. It involves eliminating transactions and reciprocal stock positions among the units that are being consolidated. Consolidation may be undertaken for any group of units, but it is particularly useful to consolidate the units within the general government sector and its subsectors. For example, assessing the overall impact of government operations on the total economy or the sustainability of government operations is more effective when the transactions between different levels of government are eliminated and only those transactions that are with other sectors or non-residents remain. Consolidation is of particular relevance for transactions such as property income (in particular interest), current and capital transfers and transactions in financial assets and liabilities. For example, the consolidated figures on the ratio of revenue or expense to GDP are more useful for some purposes than the unconsolidated figures.

30.79 In the SNA sequence of economic accounts, consolidation is discouraged. Even in the government finance presentation, where consolidation is often useful, it takes place only within a single account where the matching revenue and expense entries appear. For this reason, consolidation adjustments do not affect balancing items. For example, a grant (or transfer) from a central government to a local government unit is consolidated by eliminating the expense from central government and the revenue from the local government, thus leaving the net operating balance of the general government sector unchanged.

30.80 Conceptually, the nature of consolidation is to eliminate all flows and stock positions among the consolidated units, but practicality should be kept in mind. For example, it may be argued that transactions in the production account, such as output and intermediate consumption of goods and services, should not be consolidated. The decision about the level of detail employed in consolidation should be based on the policy usefulness of the consolidated data and the relative importance of the various types of transactions or stocks.

30.81 Within a government finance presentation, the major transactions considered for consolidation, in probable order of importance, are:

a. Current and capital transfers, such as central government grants to lower levels of government;

b. Transactions in financial assets and liabilities, such as loans to other governments for policy purposes, acquisitions of government securities by social security units and debt forgiveness;

c. Interest revenue and expense on intergovernmental holdings of financial assets and liabilities;

d. Acquisitions and disposals of non-financial assets, including intergovernmental transactions in land, buildings and equipment;

e. Taxes paid by one government unit to another;

f. Purchases and sales of goods and services between government units.

30.82 Two types of transactions that appear to take place between two government units are never consolidated because they are re-routed in the SNA sequence of economic accounts to other units. The first is that all employer social contributions, whether paid to social security or to government pension funds, are treated as being paid to the employee as part of remuneration of employees, and then paid by the employee to the fund. The second is that all taxes withheld by government units from the remuneration of their employees, such as pay-as-you-earn (PAYE) taxes, and paid to other governments should be treated as being paid directly by the employees. The government employer is simply the collecting agent in this case for the second government unit. However, taxes on gross payroll and labour force that are not treated as social contributions should be consolidated when they are significant and can be identified.

30.83 Practical difficulties always arise with consolidation. For example, when a transaction to be consolidated is identified in the records of one unit, the corresponding transaction should appear in the accounts of the counterparty. However, it may not be recorded there, it may be recorded in a different period, it may be recorded at a different value, or it may be classified as a different type of transaction. Such errors in the strict application of a quadruple accounting system may exist in relation to any transaction but become apparent when consolidation is attempted.

30.84 Even if transactions between the subsectors of government are being consolidated when presenting the accounts for general government as a whole, they should not be eliminated for the accounts of each subsector considered separately.

8. Classification of the functions of government

30.85 A classification of expenditure transactions using the *Classification of Functions of Government (COFOG)* is integral to the government finance presentation. This functional classification shows the purpose for which outlays are undertaken. These purposes may differ significantly from the administrative arrangements of governments. For example, an administrative unit responsible for health services may undertake some activities with an educational purpose, such as training of medical professionals. A cross classification of the expenditure of government by both economic nature and according to functions (as shown, for example, in *GFSM*) is encouraged.

D. Accounting issues particular to the general government and public sectors

30.86 The accounting rules of the integrated framework of the SNA apply to general government and public sectors in the same way that they apply to all other sectors of the economy. However, due to the particular nature of the activities of government units, some additional guidance is useful to assist with the treatment of selected transactions. These topics are grouped under four headings:

a. Clarification of the recording of taxes;

b. Interaction with non-resident government-type authorities (including taxes paid to another authority);

c. Issues related to debt;

d. Interaction with the corporations' sectors.

A separate section for each of these headings follows.

1. Clarification of the recording of taxes

Government issued permits

30.87 Taxes are compulsory unrequited payments, in cash or in kind, made by institutional units to the general government exercising its sovereign powers or to a supranational authority. They usually constitute the major part of government revenue, up to 90 percent in some countries. Taxes are described as unrequited because, in most cases, the government provides nothing commensurate in exchange to the individual unit making the payment. However, in some cases, the government does provide something to the individual unit in return for the payment in the form of the granting of a permit, or license. The borderline between when such payments are to be treated as a tax and when as the sale of a service or as the sale of an asset by the government requires explanation.

30.88 One of the regulatory functions of governments is to forbid the ownership or use of certain goods, or the pursuit of certain activities, unless specific permission has been granted by issuing a permit or license for which a fee must be paid. Most mandatory payments for permits and licenses authorizing pursuit of an activity or ownership of a good can be considered unrequited, making them a tax rather than a fee for services. Usually, the primary beneficiary of the regulatory schemes that require these payments is society as a whole, not the individual unit making the payment. In other cases, the permit is simply issued automatically upon receipt of the payment. Furthermore, the payments to apply for a permit or license are frequently non-refundable if the permit or license is not granted.

30.89 Nevertheless, as noted in paragraph 9.55, in cases where the transaction involves a material service element and the payment amount is not disproportionate to the cost of supplying the service, recording a sale of services to the recipient of the permit or license may be appropriate.

30.90 Chapter 27 on Contract, leases, licenses and permits discusses the case of licences issued by government in strictly limited numbers.

a. If the licence is not one to use a natural resource that qualifies as an asset and which the government controls on behalf of the community, then the payment for the licence is a tax. Notwithstanding, if the licence is legally and practically transferable to a third party, it may still be classified as an asset in the category of contracts, leases and licences.

b. When the licence is to make use of a natural resource that qualifies as an asset and which the government controls on behalf of the community, all payments for the licence or the use of the natural resource asset are treated as payments of rent. The conditions that need to be considered in deciding between the acquisition of an asset and the payment of rent are described in detail in chapter 27.

Permission to use a produced asset owned by government is treated as an operating or financial lease, as appropriate.

30.91 A decision tree on the classification of payments to government is shown in figure 30.2. The decision tree summarizes the treatment of payments for permits and licenses, payments for use or ownership of natural resources, and other types of payments to government.

Figure 30.2: Decision tree for classifying payments to government

Accrual recording of taxes

30.92 Like all transactions in the integrated framework of the SNA, government transactions should be recorded on an accrual basis. This is true on both the revenue side (for example, taxes and social contributions) and the expense side (for example, interest charges). Unless both parties to a transaction record their view of the transaction at the same point in time, the accounts do not balance.

30.93 For the government, recording revenue and claims when the underlying event occurs is particularly difficult if the government's recordings are on a cash basis. This is especially the case for taxes. Further, when accrued taxes are calculated from assessments of taxes due, there may be a risk of over- or understatement of tax revenue. Since tax revenue is a crucial government finance aggregate, such an error must be avoided.

30.94 As explained in chapter 4 on Flows, stocks and accounting rules, the period of time between the moment a tax or any distributive transaction is recorded as accruing in the non-financial accounts and the moment the payment is actually made is bridged by recording an account receivable/payable in the financial account. In cases where a prepayment covering two or more accounting periods is made to government, an account payable is recorded in the financial account of government for the amounts due in future periods. In effect this is a financial advance made to government by the payee. It is a liability of the government and an asset of the payee. This liability is extinguished as the amounts fall due in future periods.

30.95 The amount of taxes recorded as accruing recognizes that some taxes that may be due in principle are in practice unlikely to be collected. The alternative means of making the necessary adjustments are described in paragraphs 9.59 to 9.61.

Tax credits

30.96 Tax relief can take the form of a tax allowance, an exemption, a deduction or a tax credit. Tax allowances, exemptions and deductions are subtracted from the tax base before the tax liability is computed. A tax credit is an amount subtracted directly from the tax liability due by the beneficiary household or corporation after the liability has been computed. Tax credits can sometimes be payable, in the sense that any amount of the credit that exceeds the tax liability is paid to the beneficiary. In contrast, some tax credits are non-payable (sometimes called wastable) and are limited to the size of the tax liability.

30.97 In *Revenue Statistics* and *GFSM*, a tax relief that is embedded in the tax system is recorded as reducing the tax liability of the taxpayer and therefore as reducing government tax revenue. This is the case for tax allowances, exemptions and deductions, since they enter directly into the calculation of the tax liability. This is also the case for non-payable tax credits as their value to the taxpayer is limited to the size of their tax liability. However, when tax relief is granted in the form of payable tax credits, it should be recorded on a gross basis: the total amount of tax receivable should be recorded as tax revenue of government and the total amounts of payable tax credits should be recorded as expense.

30.98 Treating payable tax credits in this way has no impact on the net borrowing or net lending of the general government, but has an impact on both the tax burden and the ratios of public expense or expenditure to GDP.

2. Transactions with other national, international and supranational organizations

30.99 Transactions may occur between government units and either international or supranational organizations, regarded as non-resident units. Even when government acts as the unit channelling funds to or from the non-resident unit, the transactions are recorded as taking place directly with the non-resident unit. Six cases may be considered:

a. *Taxes*: Some taxes on products, such as import duties, excises and value added taxes, might be payable to a supranational organization because they are considered to be levied directly by the supranational organization.

b. *Subsidies*: Any subsidies paid by a supranational organization directly to a resident producer are recorded as payable by the supranational organization rather than a resident government unit.

c. *Current international cooperation:* This consists of current transfers in cash or in kind between the governments of different countries or between governments and international organizations and includes specifically:

- Transfers between governments that are used by the recipients to finance current expenditures, including emergency aid after natural disasters; they include transfers in kind in the form of food, clothing, blankets, medicines, etc.;
- Annual or other regular contributions paid by member governments to international organizations (excluding taxes payable to supranational organizations);
- Payments by governments or international organizations to other governments to cover the salaries of those technical assistance staff who are resident in the country in which they are working and are employed by the host government.

d. *Miscellaneous current transfers:* These consist of payments to international or supranational authorities that are regarded as being compulsory but are not taxes.

e. *Capital transfers:* These include investment grants and other capital transfers, including the counterpart transaction of debt cancellation or debt assumption as a capital transfer payable to the former debtor..

f. *Financial transactions:* Some financial transactions, usually loans, may be recorded when granted by international organizations (for example, the World Bank and the International Monetary Fund) or granted to other governments.

International membership dues

30.100 In some cases, membership dues and subscription fees payable to international organizations may not be treated as transfers but as payments for a service, recorded on an accrual basis. Exceptionally, when there is a possibility, even if unlikely, of repayment of the full amount, the payment may represent the acquisition of a financial asset.

International assistance

30.101 International assistance sometimes takes the form of making goods, such as food and clothing or emergency equipment, available following a natural disaster. In addition to the goods or services themselves, all costs identifiable with the delivery of the goods or services such as transportation to the foreign country, delivery within that country, the remuneration of government employees of the donating country to prepare the shipments or oversee their delivery, insurance and so forth should be included in the value of the transfer to the extent that these costs are met by the donor.

30.102 The prices of the goods or services in the receiving country might be quite different from the prices in the donor country. As a general principle, the value of the donation to the recipient should be regarded as equal to the cost of providing the assistance to the recipient. It follows that the prices of the donor country should be used as a basis for the calculation of the value of the donation.

30.103 When the goods and services and associated delivery charges are donated by government, NPISHs or households, the donated items are excluded from final consumption (and a current transfer in kind is recorded). If the items are donated by corporations, they are recorded as a current transfer followed by a purchase of the goods by the recipient. In both cases the items involved are included in exports of the donor country and imports of the recipient country.

3. Debt and related operations

Debt

30.104 Debt is a commonly used concept, defined as a specific subset of liabilities identified according to the types

of financial instruments included or excluded. Generally, debt is defined as all liabilities that require payment or payments of interest or principal by the debtor to the creditor at a date or dates in the future. Consequently, all debt instruments are liabilities, but some liabilities such as shares, equity and financial derivatives are not debt. However, due to specific legal, institutional or practical arrangements some other definitions of debt may also exist. It is therefore useful in all cases to clearly identify the definition of debt according to the instruments included.

30.105 Debt operations are often used by government as a means of providing economic aid to other units. The general principle for any cancellation or assumption of debt of one unit by another unit made by mutual agreement is to consider that there is a voluntary transfer of wealth between the two units. This means that the counterpart transaction of the liability assumed or of the claim cancelled is a capital transfer.

Debt restructuring

30.106 Debt restructuring (also referred to as debt reorganization) is an arrangement involving both the creditor and the debtor (and sometimes third parties) that alters the terms established for servicing an existing debt. Governments can be involved in debt restructuring as debtors, creditors, or guarantors. There are four main types of debt restructuring:

a. Debt forgiveness. A reduction in the amount of, or the extinguishing of, a debt obligation by the creditor via a contractual arrangement with the debtor.

b. Debt rescheduling or refinancing. A change in the terms and conditions of the amount owed, which may result or not in a reduction in burden in present value terms.

c. Debt conversion and debt prepayment. In a debt conversion, the creditor exchanges the debt claim for something of economic value other than another debt claim, on the same debtor. This includes debt-for-equity swaps and debt-for-development swaps among other arrangements.

d. Debt assumption and debt payments on behalf of others when a third party is also involved.

Debt forgiveness (or debt cancellation)

30.107 ***Debt forgiveness is defined as the voluntary cancellation of all or part of a debt obligation within a contractual agreement between a creditor and a debtor. In contrast to debt write-offs, debt forgiveness arises from an agreement between the parties to the debt with the intention to convey a benefit to the debtor, rather than unilateral recognition by the creditor for amounts that they no longer expect to collect.*** Debt forgiven may include all or part of the principal outstanding, inclusive of any accrued interest arrears (interest that fell due in the past) and any other interest costs that have accrued. Debt forgiveness does not arise from the cancellation of future interest payments that have not yet fallen due and have not yet accrued.

30.108 Debt forgiveness is recorded as a capital transfer received by the debtor from the creditor at the time specified in the agreement that the debt forgiveness takes effect with a repayment of the debtor's liability in the financial account and a matching "receipt" by the creditor. In the balance sheet, the debtor's liability and creditor's asset are reduced by the amount of debt that is forgiven. Valuation of the amount of the debt forgiven is at exchange prices for flows and stocks, except for loans where the nominal value is used.

Debt rescheduling and refinancing

30.109 Debt rescheduling (or refinancing) is an agreement to alter the terms and conditions for servicing an existing debt, usually on more favourable terms for the debtor. Debt rescheduling involves rearrangements on the same type of instrument, with the same principal value and the same creditor as with the old debt. Refinancing entails a different debt instrument, generally at a different value and may be with a creditor different than that from the old debt.

30.110 Under both arrangements, the debt instrument that is being rescheduled or refinanced is considered to be extinguished and replaced by a new debt instrument with the new terms and conditions. If there is a difference

in value between the extinguished debt instrument and the new debt instrument of the same type, the difference is a type of debt forgiveness by government and a capital transfer is recorded to account for the difference.

30.111 ***Debt rescheduling is an arrangement that involves the formal deferment of debt service payments and the application of new and generally extended maturities to the deferred amounts.*** The new terms normally include one or more of the following elements: extending repayment periods, reductions in the contracted interest rate, adding or extending grace periods for the repayment of interest and principal, fixing the exchange rate at favourable levels for foreign currency debt, and rescheduling the payment of arrears, if any.

30.112 The treatment for debt rescheduling is that the existing contract is extinguished and a new contract created. The applicable existing debt is recorded as being repaid and a new debt instrument (or instruments) of the same type and with the same creditor is created with the new terms and conditions. The transaction is recorded at the time agreed by both parties and at the value of the new debt.

30.113 ***Debt refinancing is an arrangement that involves the replacement of an existing debt instrument or instruments, including any arrears, with a new debt instrument or instruments.*** It can involve the exchange of the same type of debt instrument (such as a loan for a loan), or different types of debt instruments (such as a loan for a bond). For instance, a public sector unit may convert various export credit debts into a single loan or exchange existing bonds for new bonds through exchange offers given by its creditor (rather than a change in terms and conditions).

30.114 The treatment of debt refinancing transactions is similar to debt rescheduling to the extent that the debt being refinanced is extinguished and replaced with a new financial instrument or instruments. However, unlike in rescheduling, the old debt is extinguished at the value of the new debt instrument except for non-marketable debt (e.g., a loan) owed to official creditors. The balance sheet reflects the transactions extinguishing the old debt instrument and the creation of the new debt instrument along with any valuation change (the difference between the value of the old and new debt instruments) recorded in the revaluation account.

Debt conversion

30.115 ***Debt conversion (swap) is an exchange of debt (typically at a discount) for a non-debt claim such as equity, or for counterpart funds that can be used to finance a particular project or policy.*** An example is a debt-for-equity swap, which occurs when a creditor agrees to replace a debt owed to it with equity. For example, the government may agree with a public enterprise to accept an increase in its equity stake in the public enterprises instead of making a loan. If there is a difference in value between the extinguished debt instrument and the new equity instrument, it is a type of debt forgiveness by government and a capital transfer is necessary to account for the difference.

Debt assumption

30.116 ***Debt assumption is trilateral agreement between a creditor, a former debtor, and a new debtor, under which the new debtor assumes the former debtor's outstanding liability to the creditor, and is liable for repayment of debt.*** When a government assumes a debt, in most instances the counterpart transaction of the new government liability is a capital transfer in favour of the defaulting debtor. However, if the government acquires an effective legal claim against the defaulting unit and there is a realistic probability that the claim will be paid, the government may record, as the counterpart transaction of its new liability, the acquisition of a financial asset equal to the present value of the amount expected to be received. If this amount is equal to the liability assumed, no further entries are required. If the amount expected to be recovered is less than the liability assumed, the government records a capital transfer for the difference between the liability incurred and any asset acquired. Similarly, if a government has its debt assumed by another government, then it might record a capital transfer receivable, a new debt to the assuming government unit, or a combination of the two.

30.117 Debt assumption frequently occurs when a government guarantees a debt of another unit and the guarantee is called (or activated). The treatment of the guarantee itself is described below.

30.118 Debt payments on behalf of others are similar to debt assumptions, but the unit making the payments does

not assume the entire debt. The transactions recorded are similar to those described under debt forgiveness.

Other issues related to debt restructuring

30.119 Debt write-offs refer to unilateral reductions by a creditor in the amount owed to it, usually when a creditor concludes that a debt obligation has no value or a reduced value because part or all of the debt is not going to be paid. Frequently the debtor is bankrupt or has disappeared. An other change in the volume of assets is used to record the write-off. Unlike the cases of debt assumption and debt forgiveness, no capital transfer is recorded and therefore there is no impact on net lending or borrowing of government.

30.120 Debt arrears occur when a debtor misses an interest or principal payment. The debt instrument will not normally change, but knowing the amount of debts in arrears can provide important information. When feasible and important, therefore, each category of debt should be divided into those instruments that are in arrears and those not in arrears.

30.121 ***Debt defeasance is an arrangement that allows a debtor (whose debts are in the form generally of debt securities and loans) to remove certain liabilities from the balance sheet by pairing them, irrevocably, with assets of equal value to the liabilities.*** Defeasance may be carried out either by placing the paired assets and liabilities in a trust account within the institutional unit concerned, or by transferring the paired assets and liabilities to another institutional unit. In the former case, there are no transactions with respect to defeasance and the assets and liabilities should not be excluded from the balance sheet of the unit. In the latter case, the assets and liabilities in question are moved to the balance sheet of second unit as long as this unit is recognized as an institutional unit in the SNA sequence of economic accounts. Often the unit to which the paired assets and liabilities may be moved is a special purpose unit. The conditions under which a special purpose unit is considered to be an institutional unit are described in paragraphs 5.81 to 5.84 and 5.94 to 5.96. If the special purpose unit is purely passive it is not considered to be an institutional unit and the assets and liabilities concerned do not move off-balance sheet.

30.122 Debt issued on concessional terms occurs when units lend to other units at a contractual interest rate that is intentionally set below the market interest rate that would normally apply. The degree of concessionality can be enhanced with grace periods, and frequencies of payments and a maturity period favourable to the debtor. Since the terms of a concessional loan are more favourable to the debtor than market conditions would otherwise permit, concessional loans effectively include a transfer from the creditor to the debtor.

30.123 Loans with concessional interest rates could be seen as providing a stream of current transfers equal to the difference between imputed interest payments based on the applicable market rate of interest and the actual interest payments required under the terms of the loan. However, for practical reasons, such current transfers are only recorded in cases of an employer lending to employees at below-market rates of interest. In the cases of loans provided by governments and international organizations that contain a gift or transfer element, the gift element, to be recorded as a capital transfer in supplementary tables can be calculated by the present value of the future concessional elements. Alternatively, the gift element could be calculated as the difference between the original nominal value of the loan and the market value of the loan, which can be approximated by the present value of future payments discounted with the market interest rate.

30.124 Further details on the recording of debt operations can be found in *GFSM*, Eurostat's *Manual on Government Deficit and Debt*, the *Public Sector Debt Statistics Guide for Compilers and Users*, the *External Debt Statistics Guide for Compilers and Users*, and annex 2 of *BPM7*.

Government guarantees

30.125 Three types of guarantees are recognized in the SNA sequence of economic accounts: standardized guarantees, guarantees that meet the definition of a financial derivative and one-off guarantees. The recording of standardized guarantees (for government and other units offering such guarantees) is described in chapter 25 on Selected issues in financial instruments.

30.126 Guarantees that meet the definition of financial derivatives are those that are actively traded on financial markets, such as credit default swaps. The derivative is based on the risk of default of a reference instrument

and so is not actually linked to an individual loan or bond. They have no effect on the net lending or borrowing of government.

30.127 One-off guarantees exist where the conditions of the loan or the security are so particular that it is not possible for the degree of risk associated with the loan to be calculated with any degree of accuracy. In most cases, the granting of a one-off guarantee is considered a contingency and is not recorded as a liability for the guarantor. Payments under a one-off guarantee are recorded when the call on the guarantee is made or when the fact that such a call will be made is very well established. As an exception, one-off guarantees granted by governments to corporations in certain financially distressed situations and with a very high likelihood to be called are treated as if these guarantees were called at inception. A particular case in point is a bailout by government, which is discussed below.

30.128 The activation of a one-off guarantee is treated in the same way as a debt assumption. The original debt is liquidated and a new debt is created between the guarantor and the creditor. In most instances, the guarantor is deemed to make a capital transfer to the original debtor, unless the guarantor acquires an effective claim on the creditor, in which case it leads to the recognition of a financial asset (the liability of the creditor towards the guarantor). In exceptional cases where there is a very high likelihood that the guarantee will be called (such as one-off guarantees granted by governments to corporations in financial distress), the one-off guarantee may be treated as called at inception.

30.129 The activation of a guarantee may or may not require repayment of debt at once. The accrual principle for time of recording requires that the total amount of debt assumed is recorded at the time the guarantee is activated and the debt assumed. Repayments of principal by the guarantor (the new debtor) and interest accruals on the assumed debt are recorded as these flows occur.

Securitization

30.130 Securitization occurs when a unit, named the originator, conveys the ownership rights over financial or non-financial assets or the right to receive specific future flows, to another unit, named the securitization unit. In return, the securitization unit pays an amount to the originator from its own source of financing. The securitization unit is often a special purpose unit. The securitization unit obtains its own financing by issuing debt securities using the assets or rights to future flows transferred by the originator as collateral. Government units have made widespread use of this source of financing.

30.131 The first case involving government to be considered is when the securitization comprises the sale (or the transfer) of an asset. (In the SNA sequence of economic accounts, a stream of future tax receipts is not recognized as a government asset that could be used for securitization.) The key question for how to record the transaction properly is to determine whether the transfer of the asset is a sale of an existing asset to the securitization unit or a way to borrow using possible future flows of revenues as collateral. In order to be treated as a sale, the asset must already appear in the balance sheet of the government and there must be a full change of ownership to the securitization unit as evidenced by the transfer of the risks and rewards linked to the asset. The following factors must also be considered:

a. To be recorded as a sale, the purchase price must be equal to the current exchange price.

b. If the government, as the originator, guarantees repayment of any debt related to the asset incurred by the securitization unit, it is unlikely that all of the risks associated with the asset have been transferred.

30.132 The second case involving government is the securitization of future revenue flows. In the SNA sequence of economic accounts, a stream of future incomes is not recognized as an asset. In most of these cases, it is not the rights to the income that are used as collateral, but the obligation of the government to use a sufficient amount of the future income to repay the borrowing in full. If more income is earned than is needed to repay the borrowing, the excess is retained by the government. Because receipts of future income are uncertain, “rights” to considerably more income than is necessary to repay the borrowing of the securitization unit are usually used as collateral. The amount received by the government as the originator is treated as borrowing, usually in the form of a loan.

Government assumption of pension liabilities

30.133 On occasion, large one-off transactions may occur between a government and another unit, usually a public corporation, linked to pension reforms or to privatization of public corporations. The goal may be to make a public corporation competitive and financially more attractive by removing existing pension liabilities from the balance sheet of the public corporation. This goal is commonly achieved by the government assuming the liability in question in exchange for a cash payment of the same value. If the cash payment is not equal in value to the liability incurred, a capital transfer is recorded for the difference.

4. Relations of general government with corporations

Earnings from equity investment

30.134 A government unit has a close relationship with any public corporation or quasi-corporation that it controls. Despite this close relationship, flows related to the equity investment between a government unit and its controlled corporation are treated in the same way as flows related to equity investment between any corporation and its owners. An equity investment is the action by economic agents of placing funds at the disposal of corporations. The amounts invested, described as equity capital, are part of the own funds of the corporation and the corporation has a large degree of freedom in the way in which they are used. In return, the owners receive shares or some other form of equity securities. These financial assets represent property rights on corporations and quasi-corporations and entitle the holders to:

a. a share of any dividends (or withdrawals of income from quasi-corporations) paid at the discretion of the corporation but not to a fixed and predetermined income, and

b. a share in the net assets of the corporation in the event of its liquidation.

See also paragraph 30.138 for a discussion on the acquisition of equity by governments in public corporations.

Dividends versus withdrawal of equity

30.135 It is important to distinguish between the return of the equity investment by the corporation to its owner and the payment of income in the form of dividends. Only regular distributions from the entrepreneurial income are recorded as property income either as dividends or withdrawals of income from quasi-corporations. Large and irregular payments, based on accumulated reserves or sale of assets are recorded as a withdrawal of equity.

30.136 However, it is encouraged to produce, as supplementary items, estimates applying an alternative treatment of earnings from equity investment in corporations in which the retained earnings of corporations are recorded as distributed to the shareholders and reinvested by them. This alternative treatment is also relevant for public corporations.

Disposal of assets

30.137 The sale of non-financial assets owned by public corporations, such as buildings and land, does not by itself constitute privatization and is recorded in the capital account of the corporations' sector as disposals of fixed assets or other non-financial assets. However, if the public corporation sells assets and then surrenders the proceeds of such a sale to general government, this is recorded as a withdrawal of government's equity in the corporation. A withdrawal of equity is also recorded if the public corporation disposes of a financial asset and surrenders the proceeds to government.

Acquisition of equity, capital transfers and subsidies

30.138 Subsidies are current transfers, usually made on a regular basis, from government to enterprises designed to

influence their levels of production, the prices at which their outputs are sold or the remuneration of the enterprises. Payments to public corporations on a large and irregular basis (often called "capital injections" in the media) are not subsidies. They are treated as either a capital transfer or the acquisition of equity:

a. Payments to cover cumulated losses over two or more years arising as a result of public policy purposes should be recorded as a capital transfer.

b. A payment made in a commercial or competitive context may be treated as an acquisition of equity. This should be limited to cases where the government is acting similarly to a private shareholder in that it has a valid expectation of a cash return in the form of future property income. In this case, the corporation will probably issue new shares to the government and enjoy a large degree of freedom over how the funds provided are used.

Treating the payments as the acquisition of equity depends on evidence of the corporation's profitability and its ability to pay dividends in future.

Privatization

30.139 Privatization is usually understood to consist of the sale of shares or other equity held by government in a public corporation to other units. Often these other units are outside the public sector but they need not be; for example, a public corporation may buy shares in a unit newly separated from government. Such sales are purely financial transactions, recorded in the financial account of the SNA sequence of economic accounts. The assets owned by the public corporation continue to belong to the corporation; it is the ownership of the corporation itself, as represented by the ownership of the equity in it, that changes hands. In effect, the government's claim on the public corporation reduces because government exchanges shares or equity in the public corporation for cash or other financial assets. The cost of any financial services that government must purchase to achieve the sale are treated as an expense that should be recorded as intermediate consumption by general government in the integrated framework of the SNA.

30.140 Privatization may be organized in more complicated institutional arrangements. For instance, some or all of the non-financial assets of a public corporation may be sold by a public holding company, or other public agency, controlled by a government and all or part of the proceeds paid to the government. In such cases, the public corporation will record the disposal of non-financial assets in the capital account, while the payment to the government of the proceeds from the sale is recorded as a withdrawal of equity.

30.141 The case where the privatization is arranged via a restructuring agency is discussed in paragraphs 30.45 to 30.48.

Nationalization

30.142 Nationalization is a process whereby government takes control of specific assets or an entire corporation, usually by acquiring the majority or the whole stake in the corporation. The recording of flows differs according to the way the government takes control.

a. *Appropriation or confiscation*: the change in ownership of assets is not the result of a transaction made by mutual agreement. There is no payment to the owners (or the compensation is not commensurate with the fair value of the assets). The difference between the market value of the assets acquired and any compensation provided is recorded as an uncompensated seizure in the other changes in the volume of assets and liabilities account.

b. *Purchase of shares*: the government buys all or some of the shares in the corporation at a price that is the observed market price or very close to it. There is usually a legal context for the transaction which ensures that it is made by mutual agreement, even though the former owner may have little choice whether or not to accept the offer, or to negotiate the price. The purchase of shares is a financial transaction recorded in the financial account.

Bailouts

30.143 A bailout is a term meaning a rescue from financial distress. It is often used when a government unit provides either short-term financial assistance to a corporation to help it survive a period of financial difficulty or a more permanent injection of financial resources to help recapitalize the corporation. A bailout may in effect constitute another means of nationalization if the government acquires control of the corporation it is bailing out. Bailouts of financial corporations are particularly noteworthy. Bailouts are likely to involve highly publicized one-time transactions involving large amounts and are therefore easy to identify.

30.144 Intervention of general government may take various forms. For instance:

a. A government might provide equity financing or a loan on exceptionally favourable terms.

b. A government might purchase assets from the enterprise to be assisted for prices greater than their true market value or accept less than a fair price to assume its liabilities.

c. A government might create a special purpose unit or other type of public body to finance or to manage the sales of assets or liabilities of the enterprise to be assisted.

30.145 In most of these cases, the assistance provided by government to the unit suffering financial distress is recorded as a capital transfer. In determining the magnitude of the capital transfers, the following points need to be taken into account.

a. If the government buys assets from the enterprise to be assisted, the amount paid will normally be more than the true exchange price of the assets. The purchase of assets other than loans should be recorded at the actual exchange price and a capital transfer should be recorded for the difference between the exchange price and the total amount paid.

b. Governments often buy loans from financial institutions during a bailout. Unless a loan becomes tradeable and is traded with established market value, it is always recorded in the SNA sequence of economic accounts at nominal value. Only if a market for the loans develops and the loans are regularly traded are they reclassified as securities and recorded at market value.

c. When a government buys a loan at nominal value when the fair value is much less, no capital transfer for the difference in value is recorded. However, if there is reliable information that some loans are irrecoverable, their value is reduced to zero as an other volume change in the balance sheet of the corporation and a capital transfer should be recorded from government to the corporation for their former nominal value. If there is some possibility that some part of the loan may be recoverable in the future, the loans are reclassified (at their zero value) from the balance sheet of the corporation to that of the government at the time the capital transfer is recorded. If the value of the loans subsequently increases, this is shown as a revaluation item in the government's balance sheet.

d. As part of a bailout, government may extend the range of guarantees it is prepared to offer. These guarantees should be recorded as described above in paragraphs 30.125 to 30.129 according to whether this is a one-off guarantee or part of a standardized guarantee scheme.

30.146 If a public institutional unit is created by government solely to assume management of the bailout, the unit should be classified in the general government sector. If the new unit has other functions and the bailout is a temporary task, its classification as a government unit or a public corporation is made following the general rules as described in the section above on restructuring agencies. Units that purchase financial assets from distressed financial corporations with the objective of selling them in an orderly manner cannot be considered financial intermediaries. If the unit has been created by government for this specific task, it is classified in the general government sector.

30.147 It is usually assumed that the controlling government will provide a bailout to the public corporations it controls if necessary. This implicit guarantee of the liabilities of a controlled public corporation means that the public corporation's negative net worth will become part of the net worth of the controlling government if it fails (or, possibly, part of the net worth of another public corporation controlled by the same government that is used to conduct the bailout). A controlling government's equity in a corporation that it controls can therefore be negative. Negative equity positions in controlled public corporations should be allowed to pass through to the balance sheet of the controlling government rather than recorded as zero. In addition, the

reporting of negative equity positions as supplementary "of which" items is encouraged. The same treatment of negative net equity positions also applies to the central bank.

Restructuring, mergers and reclassifications

30.148 When a public corporation is restructured, financial assets and liabilities may appear or disappear reflecting new financial relationships. These changes are recorded as changes in sector classification and structure in the other changes in the volume of assets and liabilities account. An example of such a restructuring is when a corporation is split into two or more institutional units and new financial assets and liabilities are created.

30.149 The purchase of shares and other equity of a corporation as part of a merger, on the other hand, is to be recorded as a financial transaction between the purchasing corporation and the previous owner.

30.150 Any change in the classification of assets and liabilities not related to restructuring or changes in sector classification is recorded as a change in the classification of assets or liabilities in the other changes in the volume of assets and liabilities account.

Transactions with the central bank

30.151 It is appropriate to begin by recalling the definition of the central bank and associated explanations from chapter 5 on Institutional units and sectors, economic territory and residence. The central bank is the national financial institution that exercises control over key aspects of the financial system. In general, the following financial institutions are classified in this subsector:

a. The national central bank, including where it is part of a system of central banks; and

b. Currency boards or independent currency authorities that issue national currency that is fully backed by international reserve assets.

c. Central monetary agencies of essentially public origin (for example, agencies managing international reserve assets or issuing bank notes and coin) that keep a complete set of accounts but are not classified as part of central government. Supervisory authorities that are separate institutional units are not included with the central bank but are included with financial auxiliaries.

As long as the central bank is a separate institutional unit, it is always allocated to the financial corporations' sector even though it is considered as a non-market producer.

30.152 While the bank may be legally independent of government, it is charged with carrying out government policy under the legislation establishing it. The central bank is always treated as being controlled by government and is included in the financial corporations' sector as a public corporation. It is the single exception to the rule that a unit whose output is non-market is not to be classified as a corporation.

30.153 Two types of payments by the central bank to the government require clarification:

a. Payments made on a regular basis, usually in the form of dividends, based on the current activity of the central bank (such as managing international reserve assets). These payments are recorded as dividends so long as they are not abnormally higher than the sum of net interest and net commissions receivable by the bank. Amounts in excess of this sum are to be recorded as a withdrawal of equity.

b. Exceptional payments following sales or revaluation of reserve assets. These payments should be recorded as a withdrawal of equity. The rationale is that these assets are being managed as the economic property of the nation and not of the bank itself. Their valuation affects the equity liability of the central bank and the equity assets of the government. Holding gains on the reserve assets (assets of the central bank) have a counterpart in the equity liability of the central bank and the equity assets of the central government.

30.154 The measurement of output of the central bank is described in paragraphs 7.166 to 7.170.

Public-private partnerships

30.155 Public-private partnerships (PPPs) are long-term contracts between a private unit (usually a private enterprise but occasionally a private NPI) and a public unit for the provision of a public asset or set of assets and related services in which the private party acquires, builds, or refurbishes an asset, operates the asset for the contract period and bears significant risk and management responsibility. There are many types of PPP arrangements, described variously as Private Finance Initiatives (PFIs), Build-Operate-Transfer schemes (BOTs), Build-Own-Operate-Transfer schemes (BOOTs), Design-Build-Operate schemes (DBOs), Design-Build-Finance-Operate schemes (DBFOs), concessions, and so on.

30.156 Governments engage in PPPs for several reasons, including the hope that private management may lead to more efficient production, the desire to defer or spread payment obligations, and to benefit from access to a broader range of financing sources. During the contract period, the PPP contractor operates the asset and assumes the associated risk and has the economic ownership. The legal ownership of the assets during the contract period depends on the terms of the contract and the applicable laws. Usually, once the contract period is over, the asset is transferred to the public sector, leaving the government with both economic and legal ownership. (An asset's economic owner can differ from its legal owner, as economic ownership in the integrated framework of the SNA is based on who bears the majority of the risks and rewards, and economic ownership in the integrated framework of the SNA may also differ from ownership of PPP assets in business accounts where it is based on control over the assets).

30.157 PPP contracts vary in their terms concerning the operation and maintenance of the assets during the contract period and the disposition of the assets at its end, and in the standards for the price, quality and volume of the services to be supplied. A common type of arrangement is for a private enterprise to acquire a complex of fixed assets and then use those assets to produce services delivered to the government, either for use as an input to its own production (for example, motor vehicle maintenance services) or for distribution to the public without payment (for example, education services). If the services are to be distributed to the public, government will make performance-based periodic payments linked to the asset's availability and the delivery of the related services. Alternatively, in a concession arrangement, the private enterprise builds or acquires assets, then uses those assets to sell services to the public (for example, a toll road). In either case, the payments to be received by the private enterprise are expected to cover its costs and allow it to earn an adequate rate of return on its investment.

30.158 There can be many variations in PPP contracts regarding the legal ownership of the asset during the contract period, the disposition of the assets at the end of the contract, the required operation and maintenance of the assets during the contract, the price, quality and volume of services produced and so forth. At the end of the contract period, the government may gain legal and economic ownership of the assets without payment.

30.159 Even though the private enterprise is responsible for constructing or acquiring the fixed assets, the financing may be provided by the government or facilitated by a government guarantee, and the contract may require that the assets meet the design, quality and capacity specified by the government. The contract may also require that the assets be used in the manner specified by the government to produce services and be maintained in accordance with standards specified by the government. Furthermore, the assets typically have longer service lives than the contract period, so that the government will control the assets, bear the risks and receive the rewards for a significant portion of the assets' service lives. Thus, it frequently is not obvious whether the private enterprise or the government bears the majority of the risks and reaps the majority of the rewards.

30.160 As with operating and financial leases, the economic owner of the assets of a PPP is determined by assessing which unit bears the majority of the risks and which unit is expected to receive a majority of the rewards of the assets. The factors to consider in making this assessment can be broadly divided into two groups, those associated with acquiring the asset and those associated with using it in production. Some of the risks associated with acquiring the asset are:

a. The degree to which the government controls the design, quality, size and maintenance of the assets;

b. Construction risk, which includes the possibility of additional costs resulting from late delivery, not meeting specifications or building codes and environmental and other risks requiring payments to third parties.

Some of the risks associated with using the asset in production are:

a. Supply risk, which covers the degree to which the government is able to control the services produced, the units to which the services are provided and the prices of the services produced;

b. Demand risk, which includes the possibility that the demand for the services, either from government, or from the public at large in the case of a concession arrangement, is higher or lower than expected;

c. Residual value and obsolescence risk, which includes the risk that the value of the asset will differ from any price agreed for the transfer of the asset to government at the end of the contract period;

d. Availability risk, which includes the possibility of additional costs or the incurrence of penalties because the volume and/or quality of the services do not meet the standards specified in the contract.

30.161 The relative importance of each factor is likely to vary with each PPP. It is not possible to state in advance a set of prescriptive rules that will be applicable to every situation. The provisions of each PPP must be evaluated in order to decide which unit is the economic owner.

30.162 Likewise, the complexity and variety of PPP contracts preclude the enumeration of detailed rules governing the transactions to be recorded concerning the control and use of the assets. Instead, the facts and circumstances of each contract should be considered, and an accounting treatment should be selected that best brings out the underlying economic relationships. There are, however, a few common difficulties.

30.163 If the private enterprise is assessed as being the legal owner during the contract period and if, as usual, the government obtains legal and economic ownership at the end of the contract without an explicit payment, a transaction must be recorded for the government's acquisition of the assets. One approach is for the government gradually to build up a financial claim and the private unit gradually to accrue a corresponding liability such that the value of both is expected to be equal to the residual value of the assets at the end of the contract period. At the end of the contract period, the government records the acquisition of the asset and the disappearance of the financial claim, and the private unit records the disposal of the asset and the disappearance of the corresponding liability. Implementing this approach requires existing monetary transactions to be partitioned or new transactions to be imputed using assumptions about expected asset values and interest rates.

30.164 A simpler alternative is to record the change of legal and economic ownership as a capital transfer occurring in the same period as the change in ownership. This approach does not reflect the underlying economic reality as well, but data limitations, uncertainty about the expected residual value of the assets, and contract provisions allowing various options to be exercised by either party could make recording a capital transfer acceptable on pragmatic grounds.

30.165 If the government is assessed as being the economic owner of the PPP asset during the contract period but does not make any explicit payment at the beginning of the contract, transactions must be imputed to cover the acquisition of the asset. An acquisition via a financial lease may be imputed because of the similarity with actual financial leases. The details of the implementation of this approach depend on the specific contract provisions, and possibly other factors, but in general, a loan structured as financial lease is imputed. If there are actual government payments to the private unit, they could be partitioned so that portions of each payment go towards imputed payments of principal and interest on the loan. If there are no actual government payments (as in a concession arrangement), part of the payments from the public for use of the asset may be re-routed through the government, with the imputed revenue being used by the government for imputed payments of principal and interest on the loan.

5. Rearrangement of transactions

30.166 As discussed in paragraphs 4.29 to 4.48, transactions may be arranged in the integrated framework of national accounts in order to bring out the underlying economic reality more clearly. Three kinds of rearrangement are possible: (i) reassigning, (ii) partitioning, and (iii) rerouting.

30.167 Reassigning (also known as recognizing the principal party) takes place when a transaction is conducted by one unit on behalf of another (the principal party). An example of this is when a public sector unit (either a government unit or a public corporation) collects taxes that are imposed and set by a different government

unit. In order to recognize the underlying economic reality, the tax revenue should be recorded exclusively in the accounts of the government unit that imposes the tax (the principal party). The same principles apply to other transactions where the public unit conducting the transaction is operating as an agent of another government unit that is responsible for, and sets the terms of, the transaction. Reassignment should only be applied where there is clear evidence that the third party is operating on behalf of the principal party and has no involvement or influence in setting the terms of the transactions.

30.168 Partitioning is where a single transaction from the perspective of the parties involved is recorded as two or more differently classified transactions to reflect the economic nature of the transaction. A common example of partitioning is the splitting of the rental payment on a financial lease into a payment of loan principal and a payment of loan interest, having first recognized the financial lease as a loan arrangement (see paragraphs 4.37 and 27.8 to 27.14). Another example of partitioning relevant to the public sector is that of government capital injections into corporations where the terms of the capital injection are on a non-market basis. That is, the assessed value of any claim on the corporation is less than the total capital injection. In these cases, the capital injection should be partitioned into a financial claim (usually either as a loan or equity) and a capital transfer. Another example of partitioning is splitting court-imposed payments into that element which is punitive in nature and so related to a fine or penalty from any element which is a payment of compensation (see paragraphs 9.138 to 9.141 and 9.146).

30.169 Rerouting involves recording a transaction as taking place through channels that differ from the actual ones. Most commonly this relates to the scenario where a transaction takes place between two parties but that transaction must be rerouted through a third party to bring out the underlying economic nature of the transaction. An example of this is the treatment of employer and employee social contributions where the actual transaction may be between the employer and the government. This transaction it is rerouted through the employee, i.e. recorded in the household sector accounts, to accurately reflect its nature (this is further explained in paragraph 4.31).

30.170 Government regulatory schemes may also give rise to situations where transactions involving non-government units should be rerouted through the government accounts. For instance, the government may mandate that certain economic units (e.g., fossil fuel based energy suppliers) make regular payments directly to other economic units (e.g., renewable energy suppliers). In such a case it can be assumed that the payments would not be made without the intervention of the government, and to capture the economic reality the payments might be rerouted through the government unit imposing the regulation as taxes from the units making the payments and subsequent subsidies to the units receiving the payments. However, care should be taken to not apply this principle too widely. Rerouting transactions through government should be limited to where government obliges non-government units to make unrequited payments to other non-government units (such as by replacing a tax and subsidy scheme with a regulatory scheme).

30.171 One additional area where rearrangement may be considered is where government fixes a price, or price cap, for certain goods or services. The existence of a fixed price or price cap should not by itself lead to any rearrangement through the government accounts. However, in some circumstances the government may have a mechanism where it agrees to fund the difference between the observed market price and the price cap. If the government simply pays the difference then no rearrangement is required, but if the government imposes a tax (or similar arrangement) to fund the difference and this is not paid to the government but directly to the suppliers to whom the price cap/fix applies, then this should be rerouted through the government accounts.

E. The public sector presentation of statistics

30.172 As described in section B, the public sector includes all resident institutional units controlled directly or indirectly by resident government units. In other words, the public sector consists of all units of the general government sector plus all resident public corporations.

30.173 Statistics for the public sector can be presented both within the sequence of economic accounts for institutional units and sectors or within the same government finance framework as described in section C of this chapter, depending on the use to be made of the statistics.

30.174 With either method of presentation, it is useful to show both subsectors of the public sector and the entire public sector, with the total public sector statistics shown both unconsolidated and consolidated. For example,

one column might have the statistics for the general government sector, a second column for the aggregate of all public corporations and a third column would have the unconsolidated totals for the entire public sector. Depending on the flows involved, a fourth column could show the amounts to be eliminated by consolidation and a fifth column could show the consolidated totals for the entire public sector.

30.175 Not all flows need to be consolidated for the public sector. Because the public sector is a mixture of market and non-market producers, most components of revenue and expense will have limited economic meaning for the public sector. Elements of the financial account and the balance sheet are the most likely candidates to be consolidated.

30.176 The same balancing items as stressed for the general government sector are likely to be important for the public sector. The public sector net operating balance (or saving in the SNA sequence of economic accounts) will indicate trends in net worth resulting from the public sector's current operations. This is particularly useful if there are public corporations operating at significant losses.

30.177 Net lending or net borrowing for the total public sector is an indicator of the public sector borrowing requirement. Net lending indicates the net financing supplied to either the rest of the economy or the rest of the world; net borrowing indicates net financing obtained by the public sector from either the rest of the economy or the rest of the world.

30.178 The balance sheet provides information on net worth, determined as the value of total assets less total liabilities, and financial net worth, determined as the difference between the value of total financial assets and total liabilities. The latter is often cited because of the public sector's influence on the financial system and because it is often difficult to value government-unique non-financial assets.

F. Links to International Public Sector Accounting Standards (IPSAS)

30.179 The *International Public Sector Accounting Standards (IPSAS)* are a comprehensive set of accounting standards for public sector units that meet the following criteria:

a. Are responsible for the delivery of services to benefit the public and/or redistribute income and wealth;

b. Mainly finance their activities, directly or indirectly, by means of taxes and/or transfers from other levels of governments, social contributions, debt or fees; and

c. Do not have a primary objective to make profits.

There is a close relationship between the SNA sequence of economic accounts and *IPSAS*. They are both accrual-based accounting standards and have similar measures of revenues, expenditures, assets and liabilities, and similar accounting concepts of control, economic substance, recognition, and valuation. Compilation of macroeconomic statistics in accordance with the guidelines of the SNA is facilitated by the adoption of *IPSAS* by public sector units.

30.180 The SNA and *IPSAS* have different objectives, as shown in table 30.1. The objective of *IPSAS* is to provide useful information for accountability and decision-making on the finances of public sector units, while the SNA sequence of economic accounts provides information for monitoring and analysing the performance of an economy. The SNA sequence of economic accounts is an integrated system of accounts covering the total economy and its five institutional sectors, one of which is the general government sector. Government-controlled units that are market producers or that are non-resident are outside the boundary of the general government sector, but *IPSAS* do not distinguish between market and non-market producers, or between resident and non-resident units.

30.181 The difference in objectives causes some differences in the information presented and in how accounting concepts are implemented. The main differences between *IPSAS* and the SNA sequence of economic accounts involve the reporting unit, consolidation, asset recognition, liability recognition, valuation, and the treatment of revaluations and other changes in volume. Table 30.1 summarizes the main differences between the SNA sequence of economic accounts and IPSAS.

Table 30.1: Comparison of the SNA sequence of economic accounts and *IPSAS*

SNA sequence of economic accounts	*IPSAS*
Objective	
Allow users of macroeconomic statistics to monitor and analyse the performance of the economy.	Allow users of general purpose financial reports to evaluate the financial performance and financial position of public sector units, and to hold management accountable and inform decision-making
Reporting unit	
The statistical reporting unit is an institutional unit, defined as an unit that is capable, in its own right, of owning assets, incurring liabilities, and engaging in economic activities in its own name. However, the primary focus is on groups of institutional units (sectors or subsectors).	A reporting unit is a government or other public sector organization, program or identifiable area of activity that prepares general purpose financial reports. A reporting unit may comprise two or more separate units that present general purpose financial reports as if they are a single unit; such a reporting unit is referred to as an "economic entity" or "group reporting entity".
Scope	
Total economy and the resident units comprised by its five institutional sectors. The general government sector includes government units at all levels of government, social security funds, and non-market producers controlled by government units.	Public sector units that meet the following criteria: (a) Are responsible for the delivery of services to benefit the public or redistribute income and wealth; (b) Mainly finance their activities, directly or indirectly, by taxes and/or transfers from other levels of government, social contributions, or fees; and (c) Do not have a primary objective of making profits.
Consolidation	
Flows between the units within a sector or subsector are generally not consolidated. Consolidated accounts are compiled for complementary or analytical presentations, including for the general government sector.	*IPSAS* requires presentation of consolidated financial statements for the controlling unit. In this case, the reporting unit is the "economic entity", defined as the controlling unit and its controlled units. Control is the main criterion that determines consolidation. At the highest level of consolidation, the whole-of-government reporting unit may include government departments, sub-national bodies such as state governments, government-owned enterprises, and non-resident units.
Recognition of assets	
Based on economic ownership. The economic owner of a non-financial asset or financial asset is the institutional unit entitled to claim the economic benefits associated with the use of the asset by virtue of accepting the associated risks.	Based on control. Control of the resource entails the ability to use the resource (or direct other parties in its use) so as to derive the benefit of its services or other economic benefits embodied in the resource.
Recognition of liabilities	
To maintain symmetric recording in the integrated framework of economic accounts, liabilities are only recognized when there is a recognizable corresponding claim of a counterparty. For example, provisions for one-off guarantees and bad debts are recognized in *IPSAS* but not in the SNA sequence of economic accounts. However, additional information on provisions is provided in supplementary tables; see paragraph 14.115.	A liability is recognized whenever an obligation to transfer resources exists as a result of past events and the obligation can be measured.
Valuation	
Current exchange prices are used to value flows and	On initial recognition, IPSAS requires measurement at

SNA sequence of economic accounts	*IPSAS*
stocks. Production cost, the exchange price of a similar item, the written-down current replacement cost or present value of future economic benefits may be used as alternative valuation methods if a exchange price is unavailable.	transaction price, or deemed cost where appropriate. On subsequent measurement, historical cost, current operational value, cost of fulfilment, or fair value may be used.
Revaluations and Other Volume Changes	
Holding gains or losses are reported in the revaluation account, and changes in volume are reported and in the other changes in volume account.	Some gains or losses due to revaluations or changes in volume of assets and liabilities are recognized in the Statement of Financial Performance and some are recognized in the Statement of Financial Position.

Chapter 31: Non-profit institutions

A. Introduction

1. Non-profit institutions in the integrated framework of the SNA

31.1 Non-profit institutions (NPIs) play a somewhat unusual role in the integrated framework of the SNA. Like corporations, some NPIs produce goods and services for sale with the intention to cover costs – that is to say, as market production. In common with other market producers, they cannot undertake final consumption. Like government units, some NPIs are non-market producers and make their output available free or at prices that are not economically significant to individual households or the community at large. Some of these non-market NPIs are controlled by government and included in the general government sector but those that are not are grouped in their own sector, the non-profit institutions serving households (NPISHs).

31.2 Most NPIs are separately identified institutional units. That is, they are capable in their own right of owning assets, incurring liabilities and engaging in economic activities and in transactions with other institutional units. It follows that a complete set of accounts for the unit, including a balance sheet of assets and liabilities, exists or could be constructed if required. In some countries, especially developing countries, an NPI may be an informal unit whose existence is recognized by society but does not have any legal status.

31.3 The distinguishing feature that identifies an NPI is that its status does not permit it to be a source of income, profit or other financial gain for the units that establish, control or finance it. An NPI may make a profit, it may be exempt from taxes, and it may have a charitable purpose, but none of these are determining characteristics. The only essential criterion for a unit to be treated as an NPI is that it may not be a source of income, profit or financial gain to its owners.

31.4 All NPIs produce goods and services, most often services intended for consumption by households or by corporations. Some NPIs that produce services for corporations typically charge fees (sometimes described as subscriptions and membership dues) intended to cover costs. They are often set up as associations that provide services exclusively to members. The level of fees charged, the price of membership, typically satisfies the criterion of economically significant prices as applied in the integrated framework of the SNA. For this reason, these NPIs are allocated to the corporations' sectors. An example of an NPI serving corporations is a trade association.

31.5 A non-market NPI may be controlled by government in that government may appoint its officers and determine the objectives of the institution. It is treated as an institutional unit separate from government because it has independent control of its budget (even if much or all of the funding comes from government) but it is allocated to the general government institutional sector. Such institutions provide individual and collective services. An example is a research institute controlled by government.

31.6 Other NPIs exist to provide goods and services to households either in return for a fee or free. When fees are charged, these may or may not cover a large proportion of the NPI's costs and therefore may or may not be deemed to be economically significant prices. When the fees charged are regarded as being economically significant, the NPIs concerned are treated as providing market goods and services and are allocated to the corporations' sectors. Otherwise, the NPIs fall into the institutional sector of NPISHs.

31.7 Thus it is possible to categorize NPIs as follows:

a. those providing services to corporations whose output is sold to the corporations concerned and treated as intermediate consumption;

b. those that are controlled by government and provide individual or collective services on a non-market basis;

c. those providing goods and services to households, divided between:

- those that provide goods and services to individual households at economically significant prices;
- those providing services to individual households free or at prices that are not economically

significant;

- those that provide collective services free or at prices that are not economically significant.

31.8 Those NPIs that fall under the first bullet point in category (c) are allocated to the corporations' sectors and expenditure on their output is treated as final consumption expenditure by households. Those that fall under the second bullet point under (c) are allocated to the NPISH sector and their output is treated as actual final consumption of households delivered as social transfers in kind. Those that fall under the third bullet point under (c) are also allocated to the NPISH sector, but their output remains as actual final consumption of NPISHs.

31.9 There are thus four sectors where NPIs appear in the SNA sequence of economic accounts: in both the financial and non-financial corporations' sectors, in the general government sector and in the separate sector of NPISHs. Compilation of subsectors of the first three sectors that contain NPIs only is recommended to increase the visibility of market and government-controlled NPIs. Those NPIs in the corporations' sectors may be further subdivided to show those that are foreign-controlled, those that are publicly controlled, and those that are subject to national private control. The NPIs in the general government sector may be subdivided by level of government; central, state, and local government. NPISHs may be divided between those that are foreign-controlled and those subject to national private control.

2. The accounting rules for NPIs in the integrated framework of the SNA

31.10 The output of NPIs is valued in the same way as for all institutional units. If the unit is a non-market producer, output is valued at the sum of costs, including depreciation and a net return to capital. If the unit is a market producer, output is measured by sales adjusted for changes in inventories and any production for own capital formation. Some of the latter NPIs may fall short of covering all their costs from adjusted sales, leaving the unit with a negative operating surplus. This negative operating surplus may be covered by donations (current transfers).

3. A thematic account on NPIs and other social economy institutions

31.11 For some time, there has been growing interest in studying the contribution to the economy of institutions such as NPIs and other social economy institutions because they are seen to constitute significant presence of growing economic and policy relevance. Such institutions are variously referred to as "non-profit", "voluntary", "civil society" or "non-governmental" organizations and collectively as the "third", "social economy", "voluntary", "non-profit" or "independent" sector. Such institutions attract interest because their operating characteristics are somewhat different from those of other units in the corporations and government sectors. Specifically:

a. They are not permitted to distribute profits (if an NPI) or are significantly restricted in their ability to distribute profits;

b. They may produce public goods and services as well as private goods and services;

c. They may receive as much or more from current transfers than they receive from selling their output;

d. They may depend on volunteer labour as well as paid labour;

e. Because they typically cannot pay dividends, they cannot attract equity capital in competition with corporations;

f. They may be eligible for special tax advantages;

g. They typically have special legal provisions covering the governance, reporting requirements, political participation and so on;

h. Although they provide public goods and services, they do not have the same powers or restrictions as government in deciding what these goods and services should be and how they should be allocated.

31.12 The integrated framework of national accounts provides limited visibility into the importance of NPIs and other social economy institutions in the economy because a large number of these NPIs are likely to be subsumed within the aggregates for corporations and government. To bring visibility to NPIs, guidelines for a thematic account on NPIs and related institutions have been developed, as described in the *UN Handbook on National Accounting: Satellite Account on Non-Profit and Related Institutions and Volunteer Work*. This thematic account also contains data on related institutions with a social or public benefit purpose that are not NPIs and on volunteering. Sections B and C describe the essential features of this thematic account.

B. The units included in the thematic account on non-profit and related social economy institutions

31.13 The starting point for developing a thematic account is to identify the units of interest. One possible approach would be to compile the complete sequence of accounts for an NPI sector made up of the NPI subsectors in the non-financial corporations' sector, the financial corporations' sector and the general government sector, as well as the whole of the NPISH sector. However, many of the analytical questions related to NPIs require a broader view of institutions that have a social or public focus that includes some units that are not NPIs. Expanding the boundary of the concept covered by the thematic account to include these units therefore enhances the usefulness of the thematic account.

1. Characteristics of the units included in the thematic account on non-profit and related social economy institutions

31.14 Various alternatives have been put forward for the concept around which a thematic account for non-profit institutions could be formulated. The first of these is the concept of the "social economy" which depicts non-governmental institutions with a social or collective purpose. Mutual societies, cooperatives and associations would be included.

31.15 The second concept is that of "public benefit" organizations. This covers a narrower range of institutions that serve a broad public purpose and excludes institutions that serve only their own members.

31.16 The "third sector" or "social economy sector" covered by the thematic account discussed in the *UN Handbook on National Accounting: Satellite Account on Non-Profit and Related Institutions and Volunteer Work* encompasses non-governmental institutions that have a social or public primary purpose. In the case of the related institutions, a restriction limiting the share of a unit's profit that can be distributed to its members or owners to no more than half is generally treated as consistent with having a social or public primary purpose. The requirements for inclusion in the thematic account as an NPI or related type of institution are the following:

a. The organizations should exist as identifiable institutions;

b. They should be institutionally separate from government;

c. They dare not permitted to distribute profits (if an NPI), or are significantly restricted in their ability to distribute profits;

d. They are self-governing – that is to say they are not subject to control by other units;

e. Membership in the unit is neither obligatory nor automatic but involves some degree of voluntary participation.

31.17 The main exclusions from the set of NPIs recognized in the integrated framework of the SNA are those NPIs allocated to the general government sector because, although they are institutionally separate from government, they are controlled by government units. There are a small number of informal, usually temporary, NPIs that may be excluded also. These are discussed in section D.

2. Examples of non-profit institutions included

31.18 The following are illustrative examples of the kinds of units that are likely to be found within the "non-profit sector" for the purposes of the thematic account on NPIs and related social economy institutions:

a. Non-profit service providers, such as hospitals, higher education institutions, day-care centres, schools, social service providers and environmental groups;

b. Non-governmental organizations promoting economic development or poverty reduction in less developed areas;

c. Arts and culture organizations, including museums, performing arts centres, orchestras, ensembles and historical or literary societies;

d. Sports clubs involved in amateur sport, training, physical fitness and competitions;

e. Advocacy groups that work to promote civil and other rights, or advocate the social and political interests of general or special constituencies;

f. Foundations, that is, units that have at their disposal assets or an endowment and, using the income generated by those assets, either make grants to other organizations or carry out their own projects and programs;

g. Community-based or grass-roots associations that are member-based and offer services to or advocate for members of a particular neighbourhood, community or village;

h. Political parties that support the placing of particular candidates into political office;

i. Social clubs, including touring clubs and country clubs, that provide services and recreational opportunities to individual members and communities;

j. Unions, business and professional associations that promote and safeguard labour, business or professional interests;

k. Religious congregations, such as parishes, synagogues, mosques, temples and shrines, which promote religious beliefs and administer religious services and rituals. However, an official state church incorporated into the state administration, particularly one supported by obligatory taxes, would not meet the "institutionally separate from government" criterion and thus would be excluded from the set of NPIs and related social economy institutions in the thematic account. It should be noted that religious congregations are different from religiously affiliated service agencies in such fields as health, education and social services. Service organizations related to a state church might still be considered to be within the non-profit sector, as long as they are separate institutional units and meet all the definitional criteria.

Both market and non-market units should be included in each of these categories, so long as the institution concerned is an NPI (and not just NPISHs).

3. Borderline cases

31.19 Certain other types of organizations are likely to occupy a grey area between the non-profit sector and either the corporations or general government sectors. Some of those units will properly belong within the non-profit sector but most of these units are part of the social economy covered in the related institutions segment of the thematic account on NPIs and related social economy institutions. The following guidelines may be helpful for making those decisions. (Obviously, these guidelines will have to be applied to types of organizations and not on an organization-by-organization basis, but the decision rules can still be instructive.) A key criterion for a unit to be includable in the thematic account is being prohibited or significantly restricted from distributing its profit. The main types of social economy institutions that can distribute a restricted share of their profit (usually defined as no more than half) are cooperatives, mutual societies, and social enterprises.

31.20 *Cooperatives* are organizations formed freely by individuals to pursue the economic interests of their members. The basic principles of cooperatives include:

a. democratic control, that is, one person, one vote;

b. shared identity, that is members are both owners and customers; and

c. orientation to provide services to members "at cost".

As with other institutional units, if the articles of association of a cooperative prevent it from distributing its profit, then it will be treated as an NPI; if it can distribute its profit to its members, it is not an NPI. However, if it is significantly restricted in its ability to distribute its profit to its members, it should be included in the thematic account as a related institution with a social purpose.

31.21 *Mutual societies* include such organizations as mutual savings banks, savings and loan associations, mutual insurance companies, sickness funds, and burial funds. Mutual societies, like cooperatives, are organized by individuals seeking to improve their economic situation through collective activity. They differ from cooperatives, however, in that they are mechanisms for sharing risk, either personal or property, through periodic contributions to a common fund. Normally the depositors in mutual societies formally control their operations.

31.22 Because mutual societies operate in the commercial sphere, they fall in the financial corporations' sector. Only if their articles of association prevent them from distributing profits to their members are they treated as NPIs in the integrated framework of the SNA (but still within the financial corporations' sector) and included within the NPI part of the thematic account. However, they are included in the thematic account as related institution with a social or public benefit purpose if they are permitted to distribute a restricted portion of their profit to their members.

31.23 Self-help groups are similar to both cooperatives and mutual societies in that individuals join to accomplish goals of mutual support that would be unattainable on an individual level. They differ from both, however, in that they are not principally engaged in commercial activities. As a general rule, self-help groups should be treated as membership organizations and included within the non-profit sector.

31.24 Social enterprises (or social ventures) are enterprises organized for purposes of employing and training disadvantaged individuals (handicapped, long-term unemployed, etc.) who would otherwise not find employment, supplying products of special social value, or serving disadvantaged persons in other ways. The enterprise is considered an NPI unless it generates and distributes its surplus to owners or stockholders. However, social enterprises that distribute a restricted portion of their surplus to owners or stockholders are included in the thematic account as related institutions with a public benefit purpose.

31.25 Quasi-non-governmental organizations, which are found in many European countries and elsewhere, are designed to function at arm's length from government departments, thus avoiding direct political control. To the extent that they are truly self-governing units, they are appropriately considered part of the non-profit sector, even if they exercise the limited authority delegated to them by government agencies.

31.26 Universities, like other institutions, can be either NPIs, public units or for-profit corporations. Differentiating NPIs from public units is especially difficult since both may receive significant amounts of government support, either directly or indirectly, and since even public units may have a significant degree of autonomy. The key, therefore, is whether the institution is clearly self-governing and not part of the government's administrative system. Educational institutions that are NPIs will have their own self-perpetuating boards that can determine all facets of organizational operations, without approval by government officials, and that can cease their operations without the approval of government authorities. Public educational institutions will have boards selected in significant part by government officials or agencies and lack the power to cease operations without an act of the government.

31.27 Hospitals, like educational institutions, can also be either NPIs, public units or for-profit corporations. The rules that apply to educational institutions also apply to hospitals.

31.28 Indigenous or territorial groups, such as "band councils" in Canada (a form of First Nation government) and peasant or native communities in Peru, are organized around either cultural or ethnic groupings or a particular geographic area, mainly with the purpose of improving the welfare of their members. The difficulty arises when such groups essentially operate as local governments, often making and enforcing their own laws. When that is the case, the groups do not meet the "institutionally separate from government" criterion and fall outside the boundaries of the thematic account.

4. Classification of NPIs and related social economy institutions

31.29 NPIs and related social economy institutions can be classified according to the activity they undertake or their envisaged purpose. In terms of activity, the normal classification to be used is *ISIC*. Because the detail available in *ISIC Rev.3* for many of the social services covered by NPIs and related institutions was not sufficient, an elaboration of the basic *ISIC* codes was developed for use in conjunction with the NPI satellite account. The updated version of this classification is known as the *International Classification of Non-Profit and Third Sector Organizations (ICNP/TSO)*. Similarly, some elaboration of the classification of NPIs by purpose (*COPNI*) was developed. In *ISIC Rev.4*, however, an alternative aggregation for data reporting for non-profit institutions is given in part four, section D. The twelve sections of the *ICNP/TSO* are shown in table 31.1.

Table 31.1: ICNP/TSO Sections

ICNP/TSO Section
Section A: Culture, communication and recreation activities
Section B: Education services
Section C: Human health services
Section D: Social Services
Section E: Environmental protection and animal welfare activities
Section F: Community and economic development, and housing activities
Section G: Civic, advocacy, political and international activities
Section H: Philanthropic intermediaries and voluntarism promotion
Section I: Religious congregations and associations
Section J: Business, professional and labour organizations
Section K: Professional, scientific, accounting and administrative services
Section L: Other activities

Source: *Handbook of National Accounting: Satellite Account on Non-profit and Related Institutions and Volunteer Work*, Annex 5.1

C. Accounts included in a thematic account on NPIs and related social economy institutions

31.30 The first set of accounts included in the thematic account on NPIs and related social economy institutions corresponds exactly to those in the SNA sequence of accounts. Indeed, this can be seen as a simple aggregation across the subsectors for the NPIs and related social economy institutions in the corporations' sectors plus NPISHs. NPIs in the general government sector are excluded from the thematic account, as noted above.

31.31 An alternative version of the accounts considers those NPIs and related institutions that provide services at economically significant prices but where the sales of their output bring in revenue that is significant but less than the whole of their costs. Two possible scenarios exist. The first is that the organization undertakes different types of activities, some on a market basis and some on a non-market basis, but with the market activities predominating. Although the two types of activity cannot be allocated to separate institutional units, separate establishments for each can be distinguished. In principle, the production account of the establishments undertaking market activities should measure output by sales adjusted for changes in inventories and own-account fixed capital formation, while the production account for the non-market establishments should measure output based on the sum of costs. The value of this non-market output should

be treated as distributed to households as social transfers in kind and added to household actual final consumption.

31.32 The second possibility is that only one sort of activity is undertaken but the sales cover a large part of the costs, with the balance being made up of donations. The donations are treated in the SNA sequence of economic accounts as current transfers (any donations designated for capital purposes being treated as capital transfers). The thematic account measures the value of the output as the total sum of costs. In this case, the excess of output measured by costs over the proceeds from sales is treated as non-market output, social transfers in kind and part of actual consumption of households.

31.33 A third variant of the accounts builds on the alternative version of the accounts by also including an estimate of the value of volunteer labour used in the NPIs. Volunteer labour constitutes a significant input to many NPIs. If a value is placed on this, it may exceed the value of monetary donations to some NPIs. In the thematic account, it is recommended that the value of voluntary labour is estimated on the basis of the remuneration rates of employees undertaking similar work and not at the opportunity cost of the volunteers. The *ILO Manual on the Measurement of Volunteer Work* provides guidelines on measuring volunteer work.

31.34 The cost of the volunteer labour is treated as both part of remuneration of employees and as a transfer back from these employees to the NPI where they work. The value of the output of the NPI, and the amount treated as social transfers in kind, is increased over the amount in the alternative version of the accounts by the estimated value of the volunteer labour.

31.35 The thematic account on NPIs and related social economy institutions includes other tables apart from the sequence of economic accounts. One of these shows details of revenue received with a breakdown by sector of origin and type of transaction. In particular, it is recommended to distinguish revenue coming from government split between sales and grants, and revenue coming from other institutional units split between private sales and current transfers (donations). Where possible, both sales and transfers should be separated into those coming from the domestic economy and from the rest of the world.

31.36 Another table includes information in physical units such as the number of employees, number of volunteers, number of units and number of members of the organization. In addition, some information is given on the financial account and the assets held by the NPIs and related social economy institutions.

31.37 Formats of the tables are included in Annex I of the *UN Handbook on National Accounting: the Satellite Account on Non-profit and Related Institutions and Volunteer Work*.

D. Other SNA considerations concerning NPIs

1. NPISHs and government

31.38 In some countries, NPISHs take responsibility for the provision of specific services to households that the government does not see as part of its role to provide. In others, especially developing countries, NPISHs may provide services government would like to provide but simply does not have sufficient resources to do so. This becomes very clear following a natural disaster when NPISHs may be very active in relief work.

31.39 Whether the unit undertaking the work is resident or not will depend on the normal rules concerning residence. Quick response actions that do not lead to long-term involvement in the country being assisted will be regarded as non-resident, with the production being recorded in the home countries of the units giving assistance and the assistance itself being shown as imports of goods and services by the host country funded by transfers. If the assistance extends beyond one year, the unit providing the assistance will be regarded as resident and a unit in the NPISH sector of the country receiving the assistance. In circumstances where international relief is important, it may be helpful to identify NPISHs subject to foreign control separately from other NPISHs and to identify donations from abroad for all NPISHs.

2. Informal and temporary NPISHs

31.40 Quite frequently, a number of households may get together to pool resources of knowledge and volunteer labour to serve their local community. This could include teaching in informal schools, offering medical

assistance or the construction of a road, a well, a school building, etc. When only services are provided on the basis of volunteer labour, no value for the output of the activity is recorded in the integrated framework of the SNA.

31.41 When physical structures result, the activity is included in the production boundary of the integrated framework. The value of the output is estimated by comparison with similar products elsewhere in the economy or, when it has to be estimated at the sum of costs, an estimate is made for the implicit value of the labour input. This labour input is treated as gross mixed income accruing to households who then are assumed to "purchase" the product. In fact, they may then transfer the product to another unit, often government, for maintenance. However, the recommendation in the integrated framework of the SNA, as described in paragraph 5.234 is that such organizations should be treated as informal partnerships rather than as NPISHs.

31.42 If a group of households cooperates to produce goods for sale, even if the objective is still to be able to pay for work on a communal asset, this is not treated as a non-profit institution but as an unincorporated enterprise in the household sector.

31.43 Many small groups of individuals or households may exist as a practical means of allocating shared costs. These may be as simple as a "coffee club" at the workplace or may be a more formal arrangement whereby the costs of common services provided to all tenants in a block of flats are shared equitably. Such groups are practical rather than economic. They are not treated as NPIs and their activities are not recorded in the integrated framework of the SNA. Such costs as they incur should be recorded as paid by the units to which the costs are eventually allocated.

31.44 In the case of microfinance, the unit providing the service is most likely to be either a corporation or an unincorporated enterprise. Even though the owner of the enterprise may not keep the profits but uses them to generate new loans, this does not automatically make the unit an NPI. The definition of an NPI is not that the owners choose not to withdraw profits but that they are not legally entitled to do so.

31.45 In practice it may be difficult to compile information on informal NPISHs unless the results are sufficiently important to come to general attention.

3. The output of NPISHs

31.46 NPISHs produce goods and services, but typically services, that are provided to individual households free or at prices that are not economically significant. However, it is possible conceptually for an NPISH to provide collective services. An example may be a well-financed institution that engages in research and development but makes its results freely available. Such an institution is engaged in non-market production but, because it is not controlled by government, it falls in the NPISH sector. The value of its output is treated as fixed capital formation or final consumption expenditure and actual final consumption by the NPISH itself, depending on whether the research and development provides economic benefits in the future.

31.47 The services provided by non-profit institutions serving households are not only very similar to those provided by government. They present much the same difficulties of measuring their output and of selecting suitable price indices for deflating output to volume terms.

Chapter 32: Households

A. Introduction

32.1 The economy functions because people want goods and services and are prepared to work to obtain them. At the most basic level there is subsistence activity where people work to grow food to eat. Any sort of development gives opportunities to earn money by working for others and using it to buy goods and services different from those one's labour has created.

32.2 In addition society recognizes that some individuals cannot participate in the economy in this way and so makes transfers available to the young, the old and the sick, for example. Often these transfers are undertaken by government which redistributes income on behalf of the community at large. In addition, transfers may be made by non-profit institutions or by extended family members, or others, based on traditional and cultural norms. Some individuals do not spend all their income but use some to acquire wealth.

32.3 Lastly there is income arising from the ownership of wealth. At its simplest, wealth is due to the accumulation of income earned in earlier periods (possibly generations earlier). Wealth gives rise to income because others wish to make use of it and pay to do so. In the integrated framework of the SNA such payments are called property income. Like income, wealth may be transferred from one owner to another.

32.4 The SNA sequence of economic accounts gives a clear and full accounting of all income accruing to households in the period itemized by type of income. It also accounts clearly for how this income is spent on goods and services, transferred to others or used to accumulate wealth. However, while the sequence of economic accounts ensures that the accounts of all households are balanced, it does not show how this balance is achieved for subsets of households.

32.5 This chapter is about how to use information from the SNA sequence of economic accounts on the households' sector in conjunction with other data sources to investigate the behaviour of households in greater detail. The focus here is on how income is used, how the patterns of income and use vary across types of households – also referred to as subsectors - and about the links between income and wealth at a detailed level. There are many different types of households that can be formed including those grouped by income decile, those undertaking unincorporated production activities and those whose members have specific characteristics (e.g., in terms of number or age of individuals).

32.6 A focus on types of households is of both analytical and policy interest. It is a quite different view of economic behaviour from the predominant view of the integrated framework of the SNA which is how income is generated. In the most structured form, accounts for the distribution of income, consumption and wealth across types of households, i.e., household distributional accounts, provide a rich and integrated dataset for the analysis of the households' sector.

32.7 In addition, as introduced in chapter 2 on National accounts and its contribution to measuring well-being and sustainability, and elaborated in chapter 34 on Measuring well-being and chapter 35 on Measuring the sustainability of well-being, there is a wide range of data about the well-being and sustainability of households that can be organized using accounting approaches that is outside the scope of the integrated framework of national accounts. Relevant topics include unpaid household service work, health care activity, education and training activity and human capital. These topics are not discussed in this chapter.

32.8 The difficulty in disaggregating the households' sector arises for a number of reasons that are listed here and discussed further in section B.

a. The first is that most income is earned by individuals but consumption is undertaken by households.

b. The second is that it is difficult to find a basis for sub-sectoring households such that the households in each subsector behave in a similar fashion to one another. Even if their income patterns are broadly similar, their expenditure patterns may differ according to the number and age of the members of the households. Grouping by the latter may give no similarity in the level of income.

c. The third reason concerns the source of data on household income and expenditure. Typically, information on corporations comes from establishment surveys and information on government comes

from administrative sources. These sources are fairly comprehensive and are in large part the only source, or at least the primary source, for the data to feed into the SNA. Data for households often comes from household income and expenditure surveys which are based on smaller samples, may be less frequent than establishment surveys and the data from them may be difficult to reconcile with the totals for income and expenditure that emerge from the accounting constraints in the integrated framework of the SNA. However, administrative data, for example those from taxation systems, may be available to provide higher levels of granularity thus supporting improved disaggregation of data by type of household.

32.9 The households' sector may be viewed in a number of different ways depending on whether the interest is primarily on what sort of production households undertake, what sort of income they earn or what patterns of consumption are portrayed. Given these different perspectives, it is not easy to come up with a single definitive set of subsectors for households. The conceptual and practical reasons for the difficulties are reviewed in section B. A review of possible subsectors is given in section C. The next four sections (D, E, F and G) in turn look at households as producers, households as consumers, household income, and household wealth and associated income flows. The last section, section H, discusses issues related to the accounting for the distribution of household income, consumption and wealth.

B. Household composition and measurement

1. Definition of a household

32.10 It is useful to begin by recalling the definition of a household given in paragraphs 5.4. ***A household is defined as a single person or a group of persons who share the same living accommodation, who pool some, or all, of their income and wealth and who consume certain types of goods and services collectively, mainly housing and food***. In general, each member of a household should have some claim upon the collective resources of the household. At least some decisions affecting consumption or other economic activities must be taken for the household as a whole.

32.11 Households often coincide with families, but members of the same household do not necessarily have to belong to the same family so long as there is some sharing of resources and consumption. Households may be of any size and take a wide variety of different forms in different societies or cultures depending on tradition, religion, education, climate, geography, history and other socio-economic factors. The definition of a household that is adopted by survey statisticians familiar with the socio-economic conditions within a given country is likely to approximate closely to the concept of a household as defined in the SNA, although survey statisticians may add more precise, or operational, criteria within a particular country.

32.12 Domestic staff who live on the same premises as their employer do not form part of their employer's household even though they may be provided with accommodation and meals as remuneration in kind. Paid domestic employees have no claim upon the collective resources of their employers' households and the accommodation and food they consume are not included with their employers' consumption. They should therefore be treated as belonging to separate households from their employers.

32.13 Persons living permanently in an institution, or who may be expected to reside in an institution for a very long, or indefinite, period of time, usually one year, are treated as belonging to a single institutional household when they have little or no autonomy of action or decision in economic matters. Some examples of persons belonging to institutional households are the following:

a. Members of religious orders living in monasteries, convents or similar institutions;

b. Long-term patients in hospitals, including psychiatric facilities;

c. Prisoners serving long sentences;

d. Elderly persons living permanently in care homes.

32.14 On the other hand, persons who enter hospitals, clinics, convalescent homes, religious retreats, or similar institutions for short periods, who attend residential schools, colleges or universities, or who serve short prison sentences should be treated as members of the private households to which they normally belong.

2. Residence

32.15 As described in chapter 5 on Institutional units and sectors, economic territory and residence, all members of the same household have the same residence as the household itself, even though they may cross borders to work or otherwise spend periods of time abroad. While all households are resident in the economy that is their centre of economic interest, also of interest is the phenomenon of a person abroad, often but not necessarily a family member, who remits significant amounts to the family in the domestic economy. (The same phenomenon also exists within a country, between urban and rural areas, for example.) The aspect of people moving abroad in response to better employment prospects may be seen as another facet of globalization and one that may have a significant impact on the distribution of income across households. The recording of remittances is discussed in detail in annex 4 of *BPM7*.

3. Unincorporated enterprises

32.16 All households undertake final consumption and, to a greater or lesser extent, all undertake accumulation but a household does not necessarily undertake production. To the extent possible, the production activities within households are treated as being undertaken by quasi-corporations, included in one of the corporations sectors and separated from the rest of the households' sector. However, as explained in paragraphs 5.47 to 5.51, a quasi-corporation can only be created when a full set of accounts, including balance sheet entries and information about withdrawals of income from the quasi-corporation, is available. Very frequently, and especially so in the case of a professional working alone, there may be complete information available on the production activities but it may not be possible to separate out other income flows, transfers and financial transactions relating to the production activity from those for the household in general. In this case as well as in ones where even the information on the production activity is incomplete, an unincorporated enterprise remains as part of the household.

32.17 Even when a quasi-corporation can be created and removed from the rest of the household accounts, the household may still include an unincorporated enterprise relating to other activity. For example, within a given household one person may be able to separate the production activity of repairing vehicles but another may not be able to separate the production activity of providing food for sale from the rest of the household's activities. Moreover, many households without any other production activities will contain unincorporated enterprises providing housing services from owner-occupied dwellings and from employing domestic staff.

32.18 Just as there may be production undertaken within the households' sector, there may be people providing labour to these unincorporated enterprises. Members of the household who work in the unincorporated enterprise are called self-employed and their remuneration is termed mixed income rather than remuneration of employees. Individuals who are not members of the household who are employed in an unincorporated enterprise are employees. It is possible but not always likely that the enterprise also pays for social security for these people. It is possible but even less likely that the enterprise may offer other social insurance benefits to their employees.

32.19 There is further discussion about labour input within households in chapter 16 on Labour and chapter 39 on Informal economy.

4. Determining subsectors

32.20 As noted in the introduction, the difficulty in disaggregating the households' sector arises for a number of reasons. The first is that income is earned by individuals but consumption is undertaken by households. While all households contain all individuals, it is very difficult to associate particular income recipients with particular household groups, i.e. subsectors. It is possible to have one table showing the types of income earned and the types of individuals receiving them. It is also possible to have a table of types of households and the pattern of household consumption of each. Only in the highly stylized situation of one income earner only per household (and only one source of income) can the type of income be matched with the type of household and even then only if households are categorized according to the type of income. The problem could be compared to that of the supply and use tables but whereas it is possible to establish which industries make which products, there is no natural relationship between individuals as income recipients and the household to which they belong when households are grouped by any criterion other than main income source.

32.21 The problem of trying to link income flows from the SNA sequence of economic accounts with an analytically

meaningful set of household characteristics means that very often it is necessary to revert to modelling to reconcile income related to individuals to consumption related to households.

32.22 The second problem is related to the homogeneity of households. Various criteria may be used to disaggregate the sector (discussed in section C) but whatever criterion is used, it is difficult to assert that the behaviour of the sample of households within a group is typical of the whole. This is a difficulty not normally encountered in industrial classifications and surveys. For example, if a survey covers 50 per cent of firms in a given industry it is probably reasonable to suppose that the pattern of expenditure is typical of the whole. If an enterprise doubles its turnover, the level of intermediate consumption will probably approximately double but its composition may not alter significantly. Such assumptions are very suspect in the case of household groups. This is another area where it may be necessary to use modelling to underpin analysis, this time to determine how private households within a group react to different stimuli.

32.23 The third reason concerns the sources of data on different types of households. The information for the corporations sectors generally derives from enterprise surveys. The household aggregates of income and expenditure are then known from the accounting identities in the sequence of economic accounts. While it is true that information from household surveys may sometimes reveal errors in industry data or vice versa, it is more problematic to take information from household surveys on, say, expenditure patterns of one group of households and suppose all other members of the group behave in the same way. For this reason a household income and expenditure survey is often reported as a freestanding exercise and integration with the national accounts totals is not as frequently undertaken as part of compiling the full sequence of economic accounts. as is the case with establishment surveys. In order to explore why this may be so, it is useful to look briefly at some of the problems experienced with household surveys.

5. Data on the households' sector

32.24 Any attempt to disaggregate the households' sector is likely to be dependent on high quality micro data on households or individuals. There are generally two types of data sources that can be used for this purpose, survey data (such as household income, expenditure and wealth surveys); and administrative data (such as population census, fiscal and tax records and cadastral information).

32.25 The conventions used in the collection and management of micro data sources may not always be the same as applied in national accounts. A household expenditure survey for example may not include estimates of owner-occupied housing services or production for own final use. It may measure income after tax and measure expenditure on a cash and not on an accrual basis. Administrative data, such as tax information, may be limited to cash-based income and thus excludes certain in-kind payments. Holding gains and losses may be treated as part of income, which differs from the treatment in national accounts. Various publications have been prepared to examine such differences and make recommendations on how to reconcile micro data with national accounts requirements. Particularly relevant are the *Final Report and Recommendations of the Expert Group on Household Income Statistics* and *ILO's Household Income and Expenditure* as well as the *OECD Handbook on the Compilation of Household Distributional Results on Income, Consumption and Saving in Line with National Accounts Totals*. In addition, relevant information concerning the use of micro data is available in the *OECD Guidelines for Micro Statistics on Household Wealth*, and the *OECD Framework for Statistics on the Distribution of Household Income, Consumption and Wealth*.

32.26 A major problem with household surveys is that it is very common for respondents to underestimate or underreport their income and wealth. This may be deliberate or may simply be a lack of understanding of what should be included, a lack of access to detailed information or forgetfulness. The same may apply to administrative data, although the legal sanctions that are often related to non-reporting or misreporting may result in a higher level of accuracy of the information in administrative registers. Moreover, part of the information included in administrative data about households (such as wages and salaries) may be reported by non-financial or financial corporations, directly taken from their official records.

32.27 Similarly, some items of consumption are regularly underreported in surveys, most notably expenditure on alcohol and tobacco. On the other hand, consumption of some items may be over-reported. For example, if a survey asks for expenditure on durables based on the recall of the respondent of what has been spent over the last two or three years, people often underestimate how long ago purchases were made and will report more

expenditure in the relevant period than has actually been the case.

32.28 The problem of non-response may also be a concern in household surveys, because it is highly probable that some of the households that refuse to respond have income and expenditure patterns that are different from those of respondents. For example, people with income arising from illegal activities may be very reluctant to supply information and may choose not to participate in the survey. Similarly, it is common for households at the very top and very bottom of the distribution to be omitted from the survey, either by design or on practical grounds.

32.29 Administrative data sources normally do not suffer from non-response and provide coverage of the whole or a large part of the population. However, they may sometimes have difficulties in capturing people at the very bottom of the income scale, particularly if people are not included in official records (e.g., people without a residence permit). Furthermore, the use of thresholds may sometimes lead to a lack of data for specific parts of the population. For that reason, it may be useful to combine survey and administrative data and hence benefit from the strengths of both types of data sources, and also to impute for any missing parts of the population in either of the data sources.

32.30 Household surveys may also be designed to investigate particular phenomena that are not necessarily the primary interest for national accounts. For example, they may be restricted to low income earners in urban areas. While this information is highly valuable and useful, it is not sufficient to produce aggregate numbers for national accounts. Even if the coverage is more comprehensive, the sample size may not be such as to allow disaggregation along the lines desirable within the SNA sequence of economic accounts. It is important to realize that a desired pattern of sub-sectoring should be determined before the survey is undertaken, to ensure the desired characteristics are adequately represented in the survey sample.

32.31 As administrative data sources may apply different concepts and classifications than the ones used in national accounts, the data collection and the items included may not be fully tuned to statistical needs. Furthermore, the unit of analysis may not always align to statistical needs. Depending on the administrative purpose, the data set may focus on persons, households and/or other combinations of individuals. All of these factors necessitate adjustments, including reclassifications and conceptual adjustments, in order to be able to use the administrative data for national accounting purposes.

32.32 Advances in the alignment of micro and macro data sources for the households' sector have been made, particularly in the context of developing distributional accounts for households. For this purpose, the reconciliation of data items across different households' subsectors is a core part of the measurement approach. Section H provides an overview of relevant issues.

C. Sub-sectoring households

1. The production perspective

32.33 A first consideration is to investigate the possibility of sub-sectoring households according to their involvement in production. This may be done following the pattern shown in chapter 39 on Informal economy, to identify informal and other production activity undertaken by households.

32.34 The first division is to separate institutional households and those households that do encompass an unincorporated enterprise from those that do not. Thereafter it is straightforward to identify those households whose only productive activity is connected with the owner occupation of houses or the employment of domestic staff. The households that are left may be further divided between those that employ staff to work in their unincorporated enterprises and those that do not. As described in chapter 39 on Informal economy, when proceeding along these lines it is sometimes desirable to identify the type of productive activity of an unincorporated enterprise, in particular identifying agricultural activity separately from other types of productive activity.

32.35 Within the integrated framework of the SNA, all household enterprises that can be treated as quasi-corporations because they have complete sets of accounts showing their ownership of assets (separately from those of the household to which they belong) and the withdrawal of income to their owners are classified in one of the corporations sectors. The number of household enterprises that can be treated as quasi-corporations, and thus removed from the households' sector, varies considerably from country to country depending on the availability

of accounting information and the resources available to identify such enterprises and treat them as quasi-corporations.

32.36 Although it is possible to identify households that only have owner-occupied housing as their productive activity, in many cases households will use their dwellings for a number of purposes. While from a production point of view it is possible to separate the different types of production activities, for the institutional unit as a whole it is not possible to make this separation.

32.37 In most countries, many households do not have unincorporated enterprises, so when sub-sectoring is done according to production undertaken by households, those without unincorporated enterprises are grouped together in a single, very large, subsector. The only common factor these households share is that they do not have an unincorporated enterprise. Thus while sub-sectoring households according to production is useful in some circumstances it has limitations in terms of identifying the role of different types of households in the economy.

2. The consumption perspective

32.38 It is widely observed that as household income rises so the pattern of consumption changes. The proportion of expenditure devoted to food and other necessities declines as more income is available and more expenditure is devoted to more luxury goods. Thus one approach to disaggregating households according to consumption patterns is in fact to disaggregate by level of income, assuming this captures the differences in consumption patterns. Studies showing consumption patterns according to income deciles are quite common and give interesting information about how patterns of consumption change as the overall level of income increases.

32.39 The question arises of how household consumption patterns may relate to incomes of individuals. There is no obvious way to identify how recipients of income fall into one or other income deciles when those deciles are calculated on a household basis. Households with a high aggregate income may result from one very well-paid worker or from a number of middle income earners. Further, although the production account shows total remuneration of employees and it may be possible to compare this to the total number of employees, this gives no information about the distribution of income across the input of labour in the enterprise. Not all income comes from remuneration of employees and the effect on total household consumption of other sources of income is equally uncertain.

32.40 Using the level of household income as a proxy for consumption patterns has some significant problems. One possible disaggregation of households where consumption patterns might be significantly different would be according to whether the household includes children and, where it does not, whether the household is relatively young (and may be setting up home for the first time) or relatively elderly (where expenditure on consumer durables may be lower than for other groups). However, here again there is no easy way to link the source of the income with the type of consumption of the household in which the income recipient resides.

32.41 While using the level of household income as a proxy for consumption patterns has some challenges, approaches for making suitable adjustments have been developed. At their simplest, national accounts measures often use a per capita approach or divide the income of the household by the number of household members. These simple adjustments, however, assume that there are no economies of scale from living in the same household. To reflect this effect, equivalence scales can be used to adjust household income to reflect the economies of scale achieved in consumption by households comprising more than one person. Section H provides a longer introduction to the use of equivalence scales.

3. The income perspective

32.42 An alternative approach to sub-sectoring considers not the level of income and consumption but the type of income. In this approach households may be grouped into subsectors according to the nature of their largest source of income. For this purpose, the following types of household income could be distinguished:

a. Income accruing to the owners of household unincorporated enterprises with paid employees (employers' mixed income);

b. Incomes accruing to the owners of household unincorporated enterprises without paid employees (own-account workers mixed income);

c. Remuneration of employees;

d. Property and transfer incomes.

32.43 Households are allocated to subsectors according to which of the four categories of income listed above is the largest for the household as a whole, even if it does not always account for more than half of total household income. When more than one income of a given category is received within the same household, for example, because more than one member of the household earns remuneration of employees or because more than one property or transfer income is received, the classification should be based on the total household income within each category. The four subsectors are described as follows:

a. Employers;

b. Own-account workers;

c. Employees;

d. Recipients of property and transfer incomes.

32.44 The fourth subsector, households for which property and transfer incomes make up the largest source of income, constitutes a heterogeneous group and it is recommended that it should be divided into three further subsectors when possible. These subsectors are defined as follows:

a. Recipients of property incomes;

b. Recipients of pensions;

c. Recipients of other transfer incomes.

4. Using a reference person

32.45 Other methods of sub-sectoring usually require a reference person to be identified for each household. The reference person is not necessarily the person that other members of the household regard as the "head of the household", as the reference person should be decided on grounds of economic importance rather than age or seniority. The reference person should normally be the person with the largest income although the reference person could also be the person who makes the major decisions with regard to the consumption of the household.

32.46 Once a reference person has been identified, it is possible to group households into subsectors on the basis of the reference person's characteristics. For example, subsectors may be defined according to:

a. Occupation of the reference person;

b. Industry, if any, in which the reference person works;

c. Educational attainment of the reference person;

d. Qualifications or skills possessed by the reference person.

5. The consequences of demographic change

32.47 A growing policy interest in some countries is the effect of demographic change on household material well-being and the response required by government. For example, in an ageing population, there may be less demand for educational services and more for health services.

32.48 Another concern is whether pension provision is sufficient to ensure that individuals have an adequate level of income in retirement without looking to government for income support. A focus on such issues might suggest sub-sectoring households according to whether the reference person is (i) in work, (ii) of working age but not in work, or (iii) in retirement. Again, categorization according to the main income earner will give different results from categorizing income as a whole.

6. Other considerations

32.49 It is possible to consider sub-sectoring households on quite different grounds. Examples include the number of persons in the household, the region where the household is located, the industry where the reference person works, whether the household owns property or other assets and so on.

D. Households as producers

1. Households and the informal sector

32.50 In all countries, there are some production activities undertaken by households. Many of these may be described as informal and, as described in chapter 39 on Informal economy, measuring the extent of the informal sector and how this changes as the economy develops gives particular insight into the extension of the market economy beyond formal enterprises.

32.51 The difficulty of separating the productive activity of a household from the rest of the institutional unit has been discussed in a number of places in earlier chapters, particularly in chapter 5 on Institutional units and sectors, economic territory and residence, and is referred to above in the discussion about the subsectors for households. This section therefore discusses only some aspects of those productive activities that inevitably remain within the households' sector.

2. Agriculture

32.52 In some countries, subsistence agriculture, or indeed the results of any agricultural production which are used entirely by those responsible for the production, is a very significant part of household consumption and by extension of GDP. In countries where much of the staple food is grown for own consumption, and it is seasonal, it is necessary to consider whether some part of the increase in the value of the crop due to storage is part of production. There are details of how this may be done in the annex to chapter 7 on Production account.

32.53 It should be recalled that the purchaser's price for agricultural products used for own consumption does not mean the price at the nearest local market which would include transportation costs. The exchange price is the price that somebody would pay for the crops where they are grown. This is frequently called the farm-gate price.

32.54 In principle, all fruit and vegetables grown for their own use by households with small allotments or large gardens should be included within the production boundary as applied in the integrated framework of the SNA, even in developed countries. In practice it is unlikely to be worth the effort of making estimates unless the amounts involved are significantly large.

3. Housing

32.55 In almost all economies, a large number of households live in dwellings that they own, thus requiring estimates of owner-occupied housing services. The size of the rental market may be very small and may be confined to some areas, for example urban areas, which makes it difficult to use observed market rentals as a means of estimating the services provided by all owner-occupied dwellings. In chapter 17 on Capital services, it is explained that in principle the rent on an asset can be calculated by applying a discount factor to the value of the asset at the beginning of a period, so if the value of the house is known, a figure for the services provided can be estimated. However, as also explained in chapter 17, this approach is problematic since this measure of rent does not take into account deprecation and other costs and so is not a direct approximation of market rentals. Furthermore, its estimation in practice will be difficult in those circumstances where there are no data on the stock of capital or where there is uncertainty on the net rate of return. For rural dwellings, it may be necessary to calculate the cost of construction and estimate how long the building is usable without major renovation.

32.56 All dwellings require regular maintenance. The production account for owner-occupied housing services treats as intermediate consumption only the goods and services necessary to undertake the sort of repairs that are typically the responsibility of the landlord in the case of rented buildings. These may include payment to specialists in the building trade, for example plumbers or painters, and the cost of these specialists will include their remuneration

of employees. However, when work is undertaken by the owner himself only the cost of the materials is included in intermediate consumption with no estimate made for the value of the owner's time spent on repairs. In consequence, there is no remuneration of employees appearing in the production account for owner-occupied housing services. (This may be seen to be a pragmatic convention. If labour costs were to be imputed to the owner undertaking repairs, this would be recorded as income accruing to the household but the income from the owner-occupied housing services would be reduced by an exactly offsetting amount.)

32.57 The whole of the owner-occupied housing services less actual costs (including costs other than those relating to repairs, such as other taxes on production) incurred is treated as operating surplus of the owner. The accounts for the owner of the building show the whole of the value of the owner-occupied housing services as output, any costs incurred as intermediate consumption and the difference as gross operating surplus which is paid to the household in its capacity as the owner of the unincorporated enterprise. In the use of income account, the full value of the owner-occupied housing services is shown as part of household consumption.

32.58 When major repairs are undertaken, these are treated as gross fixed capital formation and recorded following the treatments in chapter 11 on Capital account. Note that gross fixed capital formation undertaken on own-account should include an estimate of the imputed value of labour input provided free following the treatment in paragraph 7.139. For more details on differentiating between regular maintenance and major repairs, see paragraphs 11.53 to 11.55.

32.59 Some houses are owned by households but leased out by them. In this case the rental paid by the tenant is the value of the output of the rental service. The production account for the earning household shows intermediate consumption charged against this output to derive the operating surplus of the activity, which is treated as income to the owning household. In some cases, the whole of the intermediate consumption may be a service charge paid to a rental agency. It is conceivable that occasionally the service paid to the rental agency may exceed the rental income so that the rental activity produces a loss for the owning household. For example, if a house stands empty for a time, there may still be a fee payable to the rental agency. The earning household will often regard this as acceptable because one reason for owning a house to rent is because it is hoped a holding gain will be made on owning the house over a long period.

32.60 By convention, all the value added arising from leasing dwellings by households is treated as operating surplus, not mixed income.

32.61 Some houses will be owned as second homes either in the same economy or abroad. The same principles apply as in the case of owner-occupied housing services and rental services activities that come from renting out a house. If the house is in another country, it is treated as belonging to a notional resident unit in that country. The legal owner then has a financial claim on the notional resident unit. The notional resident unit therefore appears to be a foreign direct investment enterprise wholly owned by a non-resident. However, the only asset of the unit is the value of the property and the whole of the operating surplus from renting out the house is treated as being withdrawn from the notional unit and remitted to the owner so there are no retained earnings remaining to be treated as reinvested earnings.

32.62 To the extent that the house abroad is used by residents of the economy where the legal owner is resident, the rentals should be treated as exports of services from the foreign country and imports of services to the domestic economy. However, the operating surplus of the notional unit is remitted to the owner and appears as a property income outflow from the foreign country and inflow to the domestic economy, offsetting the flows of rental services (at least in part).

32.63 When a house is financed by a mortgage, in principle implicit financial services on loans and deposits relating to interest payments on the loan should be treated as part of the intermediate consumption of the production activity associated with renting the property (either for use by the owner or by a tenant). However, it may be difficult to identify implicit financial services on loans and deposits related only to interest on the mortgage and in some cases a loan using the property as collateral may not be used to secure the property for the purpose of having a dwelling available. In practice, if implicit financial services on loans and deposits are not treated as part of the intermediate consumption of the rental activity, the operating surplus from the rental activity, and GDP as well, will be higher than otherwise but the consumption expenditure of the household will also be higher, by the same amount.

4. Domestic staff

32.64 Services provided by paid domestic staff are valued at the remuneration of employees paid to those staff and including any income in kind such as free accommodation or free meals as well as any social insurance contributions that may be paid on behalf of the staff. By convention the production account for paid domestic services consists only of this remuneration of employees. All of the products used in the performance of domestic services, such as cleaning materials and tools used, are treated as final consumption expenditure of the household.

32.65 Individuals who provide paid domestic services must be members of another household. Payments to children for performing tasks in the house are not treated as the provision of paid domestic services but simply as if the payment were a transfer within the household. On the other hand payments to a child for babysitting a neighbour's children should in principle be treated as domestic services but these may be too small and difficult to measure.

32.66 In practice, some countries may include full-time domestic employees as members of the households, in which case a transfer within the households is recorded, even though transfers within an institutional unit are not normally recorded. This in turn means there is an element of double counting for the household concerned with a payment to the domestic staff and the expenditure by those staff both being included in the household's consumption expenditure.

5. Other household production within the production boundary of the integrated framework

32.67 Households are also engaged in a number of other productive activities that fall within the production boundary of the integrated framework of the SNA, as described in detail in paragraphs 7.28 to 7.46. Examples of the outputs from these activities include electricity generated from renewable sources, user-generated content on digital platforms produced by households that fulfils the criteria of intellectual property products, and transport and accommodation services supplied by households that are facilitated by digital platforms. Consistent with the advice in paragraph 7.39, where durable goods, such as vehicles, are used in the production of goods and services, the expenditure on the purchase of the durable should split between gross fixed capital formation and household final consumption expenditure.

6. Unpaid household service work

32.68 Although unpaid household service work is not recorded in the integrated framework of the SNA, chapter 34 on Measuring well-being, discusses the possibility of extending the production boundary of the integrated framework of the SNA to record all forms of unpaid household service work and volunteering thus encompassing the production of all domestic services, including those that are not performed in return for payment.

E. Households as consumers

1. Consumption goods and services provided in kind

32.69 Chapter 10 on Use of income accounts describes the different concepts of consumption expenditure, actual consumption and the use of consumption goods and services. Within the integrated framework of the SNA, only the first two are measured and the difference between them is accounted for by social transfers in kind provided by government and NPISHs to households. In principle it might be interesting to be able to distinguish social transfers in kind provided to children (for example most education), to the elderly (particularly health care) or perhaps on a regional basis. However, since there are considerable difficulties in working at this level of detail in the sequence of economic accounts, it is recommended that such extra detail is provided in thematic accounts as described in chapter 34 on Measuring well-being, such as the thematic accounts for health and education and training.

32.70 In principle, transfers in kind between households should be recorded in the SNA sequence of economic accounts. However, if there are no subsectors of the households' sector, such transfers will not appear in the accounts when they occur between resident households. On the other hand transfers in kind between resident and non-resident

households may be quite significant and should be captured through information on remittances in the balance of payments data. Prac*tical considerations are described in* International Transactions in Remittances: Guide for Compilers and Users (IMF, 2008b).

32.71 When there is a significant amount of consumption sourced from own-account production, income in kind, barter or transfers in kind it would be useful to itemize the distinction between consumption expenditure by households in kind from consumption purchased in the market place.

2. Expenditure by visitors

32.72 Most data sources for household consumption from the supply side are not able to distinguish whether purchases are made by visitors from resident households or by non-resident households. Equally, the same sources will not reveal purchases made abroad by resident households. These two items are often of a sufficiently significant size that it is important that they be estimated both for the impact on the balance of payments and in order to ensure that the supply and use table can be adequately balanced. Further consideration of expenditure by visitors, in particular for tourists, can be undertaken following the general principles of thematic accounting described in chapter 38 on Thematic and extended accounts.

3. Consumption expenditure by type of product

32.73 Most household surveys itemize consumption according to the purposes it is intended to serve: food, housing, etc. This type of breakdown is the one used in the *Classification Of Individual Consumption by Purpose (COICOP)*. For inclusion in the supply and use table, and indeed for other analyses, it is useful to prepare a table showing the cross classification of consumption by purpose and by type of product. This is useful not only in terms of providing the information for the supply and use tables but also in examining the information used to compile consumer price indices, which in turn are used to deflate consumption expenditure. If the data permit, it may also be useful to look at the composition of consumption expenditure by type of household with a view to calculating consumer price indices for different groups of households, for example for the elderly or for those with young children.

F. Household income

32.74 It is a well-established phenomenon in all countries that income is distributed unevenly and in a very skewed manner. Very many people have income significantly below the average or median income and very few people have extremely large incomes. A poverty line is sometimes quoted as half the median income but an income of twice the median does not imply great wealth; the wealthiest individuals in an economy may have incomes many times larger than the average or median income.

32.75 The reason that the sequence of economic accounts is important is that it gives a picture of how income is distributed and redistributed either compulsorily via taxes, social contributions and social benefits or voluntarily via transfers or because of ownership of financial or other assets (property income). In order to examine whether the process of distribution and redistribution of income significantly changes the overall distribution of income in the economy it is necessary to be able to show the flows for different groups of households. As noted in the introduction, it is not that straightforward to allocate income and consumption across household groups. However, distributional accounts for household income, consumption and wealth can be compiled as part of the sequence of economic accounts as described in section H (below).

32.76 To complement the detailed information on different household groups presented in distributional accounts, a range of other information can be provided to analysts on the type of household incomes building on the data from the other parts of the sequence of economic accounts. As far as value added is concerned, it may be possible to distinguish remuneration of employees paid by individual industries or perhaps according to level of education or by region. Mixed income can similarly be distinguished. Depreciation should be separated between that due to owner-occupied dwellings and that relating to other assets of unincorporated enterprises.

32.77 The sequence of economic accounts contains information on transfers in the form of taxes paid and social

contributions and social benefits split between pensions and other benefits. In some countries it is especially relevant to show personal remittances from abroad to demonstrate the impact on the domestic economy of those with strong ties to economies abroad. For countries with a large migrant population it may be similarly useful to identify the corresponding outflows and their destination.

32.78 Within property income it is useful to distinguish those flows that place resources at the disposal of the recipients from those where the receipts are already pre-committed as saving, for example, pension entitlements, property income on life insurance and interest that derives from the increase in the value of bonds. It should be noted that it is particularly useful to identify the withdrawal of income from quasi-corporations if there are many household enterprises treated as quasi-corporations.

32.79 It may be useful to identify and show separately income in kind of all types, such as wages and salaries in kind and transfers in kind, and then derive a total excluding both these and the pre-committed saving which might be called discretionary income.

G. Household wealth and associated income flows

1. Household balance sheets

32.80 For many households, their main assets are their land, houses and accumulated pension entitlements. Where they exist, claims on enterprises may also be significant. Investment in financial assets outside pension funds may also be important in some countries. However, set against the assets must be the liabilities of the households, including the loans involved in mortgages and other financial liabilities and, for example, credit card or other debt.

32.81 For households including an unincorporated enterprise other than owner-occupied dwellings, there may be other fixed assets recorded on the balance sheet but these tend to be small relative to housing.

2. Family trusts

32.82 Trusts are arrangements whereby an economic agent (a trustee) holds property (but not economic ownership) as its nominal owner for the good of one or more beneficiaries. Their job is to hold, manage and administer the funds in the trust on behalf of the settlor (the creator of the trust). Their fiduciary duty as a trustee requires them to act in the best interest of the beneficiaries of the trust. The duties of a trustee are laid out upon the creation of the trust, and while they may differ depending on the situation, some tasks are common. The trustee oversees the distribution of the trust's funds to the beneficiaries. While the assets remain a part of the trust, the trustee is responsible for any investments that are made, ensuring any assets included in the trust, taking care of the administration, and overseeing the payment of taxes.

32.83 Looking more specifically at trusts set up by households, the trustee is not the economic owner of the assets. The trustee may be the legal owner of the assets, but the accumulated assets in the trust constitute a separate fund and are not part of the trustee's own assets, indicating that economic ownership is different from nominal/legal ownership. Where family trusts are important and when household wealth is the subject of interest, it may be useful to introduce a supplementary heading under other equity owned by households to show the value of those trusts which are not consolidated within the households' sector, separately from the equity of other quasi-corporations such as partnerships. Similarly, it may be interesting to show the assets of households held in trusts which are consolidated within the households' sector. There are a range of considerations in determining the appropriate treatment of trusts, especially when it comes to whether or not these trusts should be treated separate institutional units, including, for example, the potential for trustees and the beneficiaries to be resident in different economies. The relevant treatments are described at length in paragraphs 5.97 to 5.105.

3. Pension considerations

32.84 As explained in chapter 10 on the Use of income accounts and chapter 24 on Insurance and pensions, the SNA sequence of economic accounts combines two approaches for the recording of social insurance pension schemes for which the pension entitlements are recognized as assets/liabilities. In the first approach, social contributions, including imputed social contributions, payable to the pension scheme are recorded as current expenditures, while

social benefits receivable from the pension scheme are recorded as current revenues. However, in the second approach, the contributions and benefits are also looked upon as financial transactions leading to increases and decreases of pension entitlements, respectively. To combine these two approaches, an adjustment item must be introduced, basically neutralizing the recording of the contributions and benefits as expenditures and revenues in the transfer income accounts.

32.85 As a result of the above recording of these pension schemes, the current accounts only record, on balance, the investment income receivable on the pension entitlements. For a defined benefit scheme, this investment income represents the unwinding of future entitlements using a discount rate. For a defined contribution scheme, the investment income is equal to the property income on the accumulated assets of the pension scheme, while holding gains and losses on the accumulated assets are recorded in the revaluation account.

32.86 In cases where there are no pension entitlements, a household with a significant level of financial assets is still likely to receive significant property income, though the mix of property income and holding gains and losses will depend on the investment strategy of the household concerned.

32.87 For a household where one or more of the members is building a pension, significant investment income will accrue each year but this is not accessible to the household to spend. It must be accumulated to fund future pension entitlements and thus shows as an increase in wealth.

32.88 It is possible to construct an asset account for pension entitlements showing the level of entitlements at the beginning of the year, increases due to contributions made in the year, including imputed contributions resulting from the reinvestment of investment income or imputed contributions from the pension sponsor, decreases due to payments of pension benefits, and other changes that increase or decrease entitlements.

32.89 Also, as described in section K of chapter 24 on Insurance and pensions, since pension entitlements from social security are not recorded in the sequence of economic accounts, a supplementary table can be compiled that provides information on both social security and other social insurance schemes. The presentation of this information is of particular merit in supporting international comparisons since the arrangements for social insurance vary considerably across countries. Further, section K of chapter 24 notes the possibility of compiling another supplementary table on household retirement resources that encompasses the recording of other financial resources and non-financial resources (e.g., dwellings) that are relevant for analysis of retirement incomes (see paragraph 24.210).

4. Consumer durables

32.90 Within the integrated framework of the SNA, consumer durables are not treated as a form of wealth but as a form of expenditure. However, there may be considerable interest in having a supplementary item in the balance sheets to show the worth of consumer durables. As noted in section H this supplementary item would also be relevant in the compilation of distributional accounts for households. The acquisition of durables may well be cyclical and there is interest in compiling accounts that would replace the purchase of consumer durables as current expenditure by figures for the flow of services provided from the same items treated as fixed capital. The dual use of consumer durables as part of consumption activity of households and as inputs to production activity by unincorporated enterprises should be accounted for by partitioning the use of the durables. The measurement of consumer durables is discussed further in chapter 11 on Capital account.

5. The distribution of wealth

32.91 Increasing interest is being shown in conducting surveys of household wealth along lines similar to surveys of household income and expenditure. Again the interest is to look at a disaggregation of the households' sector to discover the composition of household wealth and its relation to household income.

32.92 In general the distribution of wealth is even more strongly skewed than income. A family where the main earners are in mid-career may have a comfortable level of income and occupy their own house but still have a considerable mortgage and may not yet have built up significant pension entitlements. These topics are considered further in section H.

H. Distributional accounts for household income, consumption and wealth

1. Introduction

32.93 Aggregates and average growth rates for the accounting entries for each institutional sector only provide a partial story of the operation of the economy, in particular they may conceal large discrepancies between different types of households. Recognizing this challenge, the SNA sequence of economic accounts includes distributional accounts for the households' sector that take into account the joint relationships between income, consumption and wealth. In turn this supports the computation of multivariate indicators (such as consumption-to-income, debt-to-income or wealth-to-income ratios) for the various breakdowns of the households' sector. The description of distributional accounts for households in this section complements the wider discussion of the use of accounting approaches to support the measurement of the material well-being of households introduced in chapter 2 on National accounts and its contribution to measuring well-being and sustainability, and discussed more fully in chapter 34 on Measuring well-being.

32.94 A motivation for the compilation of household distributional accounts is that while distributional information is often available from micro statistics, these results may not always be consistent across the primary components of material well-being (including income, consumption and wealth) recorded in the SNA sequence of economic accounts. In this regard, household surveys or administrative data covering all these aspects are rarely available. Further, these data may not always be consistent over time and their aggregated trends may often diverge from aggregate national accounts data. Section B discusses these issues in more detail.

32.95 The compilation of household distributional accounts entails breaking down accounting entries for the aggregate of the households' sector into more granular subsectors consisting of specific groups of households. This should be done for the sequence of economic accounts representing different types of economic activity occurring within a period of time, as well as balance sheets. This will lead to a consistent and comprehensive description of different groups of households across the various accounts.

32.96 Thus, deriving household distributional information within the structure of the sequence of economic accounts enables the derivation of distributional results that are consistent across the various economic accounts and institutional sectors, coherent with macroeconomic aggregates and comparable over time and across countries. This information will be of considerable relevance for macroeconomic analyses and the monitoring of material well-being, providing new insights in how specific household groups are faring and assessing how macroeconomic trends and policies may affect specific household groups.

2. Establishing the focus of measurement

32.97 As noted in section B, the households' sector in the SNA sequence of economic accounts includes both private and institutional households. The latter concern persons living permanently in an institution, or who may be expected to reside in an institution for a very long, or indefinite, period of time, with little or no autonomy of decision in economic matters. These types of households may comprise large groups of individuals with very different socio-demographic backgrounds, who are not related, and who may have very different income and consumption patterns. As a consequence, they behave differently and the data about their income, consumption and wealth is not readily comparable with those of private households. For that reason, it is recommended that institutional households are treated separately from private households in the compilation of household distributional accounts and that their results are analysed and presented as a separate category. This will ensure arriving at a complete picture of the households' sector, while also providing useful information on the situation of individuals residing in institutions, the latter being of particular importance as it often concerns people with specific socio-demographic characteristics.

32.98 If it is not feasible to separately distinguish institutional households (e.g., due to a lack of information and/or the small number of institutional households), it could be opted not to treat them separately and to include them in the overall distributional analysis. In that case, it is recommended to avoid treating each institutional household (which may often comprise of many individuals with various characteristics) as a separate household, but instead to treat the population of people living in the institutions as multiple, often single person, households. This would make them much more comparable (both in size and composition) to private households although still bearing in mind that this may not fully reflect the different circumstances of these individuals.

32.99 Although the household constitutes the unit of observation in compiling distributional accounts, household units differ in size and composition, and as a consequence they will have different consumption needs. By way of example, the consumption opportunities from an income of 3,000 monetary units per month for a single person household are not comparable to those from an income of 3,000 monetary units for a household consisting of two adults and three children living at home. Therefore, to arrive at comparable results across households and support meaningful analysis of data on income, consumption and wealth at the household level, it is recommended to focus on "equivalized" results, using equivalence scales that take into account differences in the size and composition of households. This involves recalculating initial estimates according to the number of consumption units in each household and then assigning a value to each household type in proportion to its needs reflecting its size and composition. Considerations in establishing equivalence scales are discussed below.

32.100 While approaches for estimating and applying equivalence scales for income and consumption are well developed, for wealth there is less consensus on whether to use equivalence scales and what the appropriate scale would be (see also paragraph 32.120). However, for consistency across domains, it is recommended to use the same equivalence scales to adjust wealth as those used to adjust income and consumption when presenting results on income, consumption and wealth in conjunction. This recognizes that wealth may often be used to support current consumption. However, since wealth is a stock and not a flow measure, for specific purposes, it may be relevant to show results on the distribution of wealth on the basis of alternative equivalence scales, including the option to present distributional results by household size and composition without rescaling.

32.101 A complete sequence of distributional accounts for households encompasses a large number of accounting entries. It is therefore relevant to focus attention on the derivation of the following main balancing items for the purposes of distributional analysis:

32.102 For analysing the distribution of household income, the relevant balancing items are "balance of earned incomes", "disposable income" and "disposable income adjusted for social transfers in kind".

32.103 For analysing the distribution of household consumption, the relevant entries are "final consumption expenditure" and "actual final consumption".

32.104 For analysing the distribution of household wealth, the relevant balancing items are "net worth" and "net financial worth".

32.105 In addition, it is recognised that there are a range of alternative income concepts that may be of relevance for certain types of analysis. These are discussed in section B of chapter 34 on Measuring well-being. Further, countries are encouraged to show estimates of consumer durables by household type as a separate supplementary category particularly as they may significantly affect savings results and provide insights into the distribution of household wealth. For wealth, a broader wealth concept could be envisaged that includes social security pension entitlements. These possible extensions are not discussed further in this section.

32.106 The groupings that should be used in selecting households to be the focus of the distributional accounts are those that:

- provide most insight in differences in consumption, income, and wealth patterns between groups;
- are of most interest for economic analysis and government policy purposes;
- enable users to easily identify themselves with one of the groups; and
- meet specific user demands.

32.107 Based on these criteria, the primary recommendation for the grouping of households is on the basis of deciles of equivalized household disposable income. This involves looking at the relative income available to a household, ranking households accordingly and allocating them into decile groups. Of course, a decile breakdown may still conceal large inequalities within these groups and hence further breakdowns into more granular groups may be considered. This may be particularly relevant for the top income and wealth groups. Thus, accounts for the top 5%, 1% and even 0.1% of income earners may be compiled.

32.108 Other household groupings that may be considered include those based on levels of permanent income, main source of income, the age of the reference person and the composition of households. Section C and chapter 34 provide additional discussion on the sub-sectoring of households and the range of characteristics of households and household members that can be considered in distributional accounting and analysis.

32.109 The compilation of household distributional accounts will generally be undertaken at discrete points in time providing a static view of distributions. A dynamic approach to the analysis of household distributions, i.e., comparing changes in distributions over time, will also be of relevance. Maintaining a standard conceptual structure and associated definitions for the distributional accounts provide a good basis for this analysis of change recognizing that there is a range of challenges in dynamic structural analysis that will need to be considered.

3. Compiling distributional accounts for households

32.110 This section describes the basic approach for compiling distributional accounts in line with aggregate accounting entries in the sequence of economic accounts on the basis of underlying micro data sources. The application of the approach requires engagement and close collaboration with the experts in the relevant micro statistics. More detailed compilation guidance is available in the OECD's *Handbook of Distributional National Accounts*. Relevant information concerning the use of micro data is available in the *OECD Guidelines for Micro Statistics on Household Wealth*, and the *OECD Framework for Statistics on the Distribution of Household Income, Consumption and Wealth*.

32.111 There are five main steps in compiling distributional accounts for households:

1. Adjust national accounts aggregates to focus on private resident households;
2. Select relevant variables from micro data sources that link to national accounts variables;
3. Impute for missing elements and align micro-macro results;
4. Cluster households according to household subsectors/groups; and
5. Derive relevant distributional and analytical indicators (e.g., ratio to the average, ratio of the highest to lowest shares, coefficient of variation to the average, share by household group, debt-to-income ratios, savings ratios by household group).

32.112 In undertaking these steps, the following accounting issues are noted, recognizing that there are a range of data confrontation and compilation issues that must also be considered as detailed in the compilation guidance referred to above.

32.113 While the aggregate results for the households' sector are a solid starting point for the compilation of distributional accounts, these aggregates may conceal information on flows and stocks between household groups. Although these stocks and flows may not be relevant from a macroeconomic perspective, they may be very relevant in deriving distributional results. Thus, even if for the households' sector as a whole, these flows and stocks may cancel out, this need not be the case at the level of household groups. Some household groups may turn out to be net contributors/debtors, while other household groups may turn out to be net receivers/creditors. For that reason, it is important in the compilation process to explicitly acknowledge flows and stocks between household groups, and if they are not already covered in the aggregates of the households' sector, compilers should derive separate estimates. Particular stocks and flows of relevance include current transfers (e.g., remittances), capital transfers (e.g., bequests, inheritances), second-hand trade, and loans (including the related interest flows).

32.114 Some accounting entries are specific to the SNA sequence of economic accounts and do not have a corresponding item in micro data sources. Such accounting entries will require imputations to allow for a complete allocation to the relevant households in compiling distributional results. Particular entries of relevance include employers' imputed social contributions, investment income disbursements (e.g., for life and non-life insurance as well as pensions), implicit financial services on loans and deposits, estimates for the non-observed economy and social transfers in kind. In addition, on the financial side, imputations may be required for entries concerning currency and pension entitlements, as these data can be difficult to collect via household surveys.

32.115 In addition to specific challenges in the compilation of distributional accounts for income, consumption and wealth separately, there is also a general challenge of ensuring coherence across the sequence of economic accounts, in particular between the financial accounts and non-financial accounts. At an aggregate level there is commonly a large statistical discrepancy that will also need to be considered for the various household groups.

32.116 Different household groups may face different price levels. Further, households in specific regions may for example face higher prices than in other regions. If these issues are of relevance, adjustments may be made using

regional prices thus supporting fairer comparisons of income levels across households living in different regions. More generally, household groups may experience price changes differently, depending on the composition of their consumption basket. For that reason, it would be appropriate to have relevant price indices for each household group that may be used to analyse changes in real disposable income per household group.

32.117 In the derivation of equivalence scales, a value is assigned to each household type in proportion to its needs, often depending on their age, but possibly also taking into account other socio-demographic characteristics, such as sex or gender, level of income, labour force status and home ownership. The value may also depend on the specific delineation of the income or consumption measure that is analysed. For example, if the analysis includes social transfers in kind, this may require a somewhat different assignment of number of consumption units to the individual household members than when these transfers are excluded.

32.118 Furthermore, the value of the consumption unit may depend on the composition of consumption expenditure of various households. Thus, equivalence scales that are appropriate for lower income households may be less appropriate for higher income households due to different consumption patterns. For that reason, equivalence scales may differ across countries, as well as within a country for households with different socio-demographic characteristics.

32.119 As it is virtually impossible to derive equivalence scales that take into account all the relevant underlying factors, distributional studies often apply a simplified scale. Although this may have some caveats, it ensures consistency and transparency towards users, and also facilitates the assessment of the impact of the equivalence scale on the results. There are three commonly used equivalence scales in international comparisons:

- the square root of household size that, as it states, derives the number of consumption units by taking the square root of number of persons in the household;
- the OECD scale that assigns a value of 1 to the first household member, of 0.7 to each additional adult (14+) and of 0.5 to each child (up to 13); and
- the modified OECD scale that assigns a value of 1 to the household head, of 0.5 to each additional adult member (14+) and of 0.3 to each child (up to 13).

32.120 These equivalence scales are often used in the analysis of the distribution of both income and consumption. With respect to wealth, the use of equivalence scales depends on the purpose of the analysis. The use of equivalence scales should be avoided when analysing the characteristics of individual components of wealth and distribution of net wealth. To control for different household structures, complementary analysis can be done on per capita basis. However, for the joint analysis of income, consumption and wealth, it is practical to use the same equivalence scales to adjust wealth as those used to adjust income and consumption. As mentioned above, in this case, wealth is treated as a source of future income streams that can be used to finance current consumption and contribute to current material well-being in the household (see also section 7.3.6. of the *OECD Guidelines for Micro Statistics on Household Wealth*).

Chapter 33: Transactions and positions between residents and non-residents

A. Introduction

33.1 This chapter is about the relationship between the rest of the world sector in the integrated framework of the SNA and the external accounts as described in *BPM7*. It shows that the two manuals use the same macroeconomic framework, with the external accounts providing additional detail on aspects of particular relevance in international transactions or positions.

1. The rest of the world accounts in the integrated framework of the SNA

33.2 The external accounts, as described in *BPM7*, are compiled from the domestic economy perspective, which can be thought of as the sum of the transactions and positions with non-residents for each of the institutional sectors in the compiling economy. In the integrated framework of the SNA, transactions between a resident unit and the rest of the world are recorded as if the units in the rest of the world were another sector of the economy.

33.3 The production and generation of earned income accounts relate only to transactions within the national economy but flows in all other accounts potentially have an entry for the rest of the world. These entries are necessary to balance each row of the sequence of economic accounts but they do not enter the aggregate balancing items. For example, the difference between GDP and GNI derives from transactions for both expenditures and revenues recorded in the allocation of earned income account where the counterparty is a unit in the rest of the world.

Current accounts

33.4 Because the rest of the world accounts are shown in this way, flows to the rest of the world are shown as an expenditure by the rest of the world and flows from the rest of the world as revenues. For example, exports are shown as expenditures of the rest of the world and imports as revenues from the rest of the world. Entries for imports and exports form part of the goods and services account in the SNA sequence of economic accounts.

33.5 As well as entries for imports, exports and the items appearing in the allocation of earned income account, there are potential transactions with the rest of the world to be recorded for all entries in the income transfers other than social transfers in kind account and for the adjustment item for the net change in pension and non-pension entitlements appearing in the use of income account.

33.6 There are no entries for the rest of the world accounts for intermediate or final consumption (or for capital formation) because the use made of the goods and services in another economy is not relevant for the national economy; only the total amount exported is.

33.7 Although balancing items are not calculated in the SNA sequence of economic accounts for the rest of the world accounts for each individual account, two balancing items relevant to the current accounts are important. The first is the external balance on goods and services, which is the difference between imports and exports. The second is the current external balance which is the sum of all revenues coming from the rest of the world less all expenditures going to the rest of the world, including imports and exports. The current external balance thus shows how far residents call on saving by non-residents, or vice-versa.

Accumulation accounts

33.8 In the rest of the world capital account, there is no entry for (fixed) capital formation, as noted above. It is possible for a transaction to be recorded for a non-produced natural resource, for a contract, lease or licence or for purchased goodwill and marketing assets. By their nature, though, and given that land is almost always acquired by a resident unit, such entries will not be common. On the other hand, capital transfers to and from the rest of the world may be quite important.

33.9 The financial account and balance sheet detailing transactions in, and stocks of, financial assets and liabilities

where one party is non-resident are viewed as a particularly important part of the rest of the world accounts. Indeed, in *BPM7* more text is devoted to these items than to the items in the current accounts. In addition, there are possible entries for other changes in the volume of assets and liabilities and revaluation items for both, relevant to the rest of the world account.

2. The external accounts in *BPM7*

33.10 In the description of the rest of the world accounts above, it was noted that exports, for example, are treated as an expenditure by the rest of the world and imports as a revenue from the rest of the world. As its name implies, the rest of the world accounts are drawn up from the perspective of the rest of the world. *BPM7* looks at the same stocks and flows from the point of view of the domestic economy. Thus the *BPM7* entries are the mirror image of the SNA entries relating to the rest of the world. Further, in the context of *BPM7*, stock levels are usually referred to as positions and the balance sheet accounts for all financial assets and liabilities where one party to the arrangement is non-resident is called the international investment position (IIP).

33.11 The external accounts for an economy summarize the economic relationships between residents of that economy and the rest of the world. They comprise:

a. ***the balance of payments, which is a statement that summarizes economic transactions between residents and non-residents. It consists of three main accounts: (i) the current account (which includes the goods and services account, the earned income account, and the transfer income account), (ii) the capital account, and (iii) the financial account***;

b. ***the international investment position (IIP), which is a statement that shows at a particular point in time the value and composition of financial assets of residents of an economy that are claims on non-residents or are gold bullion held as (international) reserve assets and of the liabilities of residents of an economy to non-residents***; and

c. the other changes in financial assets and liabilities account, a statement that shows other flows, such as valuation changes, which reconcile the balance of payments and IIP for a specific period by showing changes due to economic events other than transactions between residents and non-residents.

These accounts correspond to the transactions, balance sheets and other changes in assets and liabilities accounts in the SNA sequence of economic accounts, respectively. Note, though, that what appear as assets in the rest of the world accounts appear as liabilities in the external accounts and vice versa.

3. The structure of the chapter

33.12 Section B of the chapter discusses the accounting rules of the external accounts. These are consistent with the accounting rules of the integrated framework of the SNA. The structure of the external accounts and their relation to similar SNA accounts is the subject of section C. A feature of the financial accounts and IIP of the external accounts is the introduction of functional categories that describe the main purpose of financial investment abroad. This is the subject of section D. Section E touches on some considerations of particular importance to the external accounts; global imbalances, exceptional financing, debt reorganization, currency unions and currency conversions.

B. Accounting principles

1. Comparison with accounting principles of the integrated framework of the SNA

33.13 Although the integrated framework of the SNA works with a quadruple-entry accounting system, the balance of payments has only a double-entry system. When a transaction is undertaken between two resident units, four entries are necessary, for example two showing the exchange of a good and two the exchange of a means of payment. However, when a resident unit carries out a transaction with a non-resident unit, national compilers are unable to verify independently the counterpart entries in the rest of the world account. As a result, although in principle the balance of payments is balanced, in practice, there may be an imbalance due to shortcomings in source data and

compilation so that there is a mismatch between financial transactions and their counterparts within the domestic economy. This imbalance, a usual feature of published balance of payments data, is labelled "statistical discrepancy". The balance of payments manuals have traditionally discussed this item, to emphasize that it should be published explicitly, rather than included indistinguishably in other items and that it should be used to indicate possible sources of mismeasurement.

33.14 However, there has been increasing interest in estimates that are derived from counterpart reporting that has better coverage, valuation, etc. As well, there has been much work done on reconciling data from the view of both parties (for example, exports of one country, with the counterpart imports recorded by the partner country) and global totals. Counterparty data are also necessary to prepare consolidated data for a currency or economic union from the data of individual member countries. In effect, all this work is built on the fact that balance of payments statistics effectively become a quadruple-entry system when used at the bilateral or global level.

Valuation

33.15 Valuation principles are the same in the integrated framework of the SNA and the external accounts. In both cases, exchange prices are used, with nominal values used for some positions in instruments where exchange prices, or market prices, are not observable. In the external accounts, the valuation of exports and imports of goods is a special case where a uniform valuation point is used, namely the value at the customs frontier of the exporting economy, that is, the FOB-type valuation (free on board). This treatment brings about consistent valuation between exporter and importer and provides for a consistent basis for measurement in circumstances where the parties may have a wide range of different contractual arrangements, from "ex-works" at one extreme (where the importer is responsible for arranging all transport and insurance) to "delivered duty paid" at the other (where the exporter is responsible for arranging all transport, insurance and any import duties). In international transactions, there may be motivations for under- or over-invoicing in order to evade taxes or exchange controls, so *BPM7* provides guidance on how to develop market-equivalent prices when these cases are identified, and how to make the necessary adjustments needed to other items affected. Invoice values may become the new approach for valuing exports and imports in the future; see paragraphs 4.177 to 4.179 for a more detailed discussion. There is also further discussion on the recording of imports and exports in chapter 15 on Supply and use tables and chapter 36 on Input-output tables.

Time of recording and change of ownership

33.16 Time of recording and ownership principles are the same in the integrated framework of the SNA and the external accounts. In practice, the change of economic ownership of goods is often taken to be when the goods are recorded in customs data. To the extent that there are differences between customs data and actual changes in ownership, such as for items with large values or goods sent on consignment (that is, dispatched before they are sold), adjustments are made.

33.17 There are no longer any exceptions to the recording basis of the change of economic ownership. However, there is a different presentation in the case of merchanting; that is, where an owner buys and resells goods in the same condition without the goods passing through the territory of the owner. In that case, the acquisition of the goods is identified as a change of ownership but shown as a negative export rather than an import on acquisition of the goods and as a positive export on disposal. If the goods are acquired in one period and not disposed of until a subsequent period, they will appear in changes in inventories of the merchant even though these inventories are held abroad. A consequence of this treatment is that in the integrated framework of national accounts and the external accounts, merchanting appears as transactions in goods.

33.18 The principle of recording imports and exports when change of ownership takes place applies also to items such as high-value capital goods where change of ownership is recorded as work is put in place; see paragraphs 11.62 to 11.64.

Netting

33.19 The same rules on netting are applied in *BPM7* as in the integrated framework of the SNA. In general, netting is

not advised except in the special case of recording transactions in financial assets and liabilities. However, only acquisitions and disposals of the same type of asset (or incurrence and redemption of the same type of liability) are netted. There is no netting of assets against liabilities, even of the same sort of instrument and no netting across different sorts of instruments. Greater detail about netting in respect of financial instruments appears in paragraphs 4.246 to 4.251.

2. Units

33.20 The external accounts and the integrated framework of the SNA are built on the same definitions of institutional units and residence. For a detailed discussion of economic territory and the residence of institutional units, see chapter 5 on Institutional units and sectors, economic territory and residence.

C. A comparison between the external accounts and the SNA rest of the world accounts

33.21 Like the integrated framework of the SNA, the external accounts cover accounts for current transactions, accumulation accounts and balance sheets. The transaction accounts are collectively called the balance of payments. An overview of the external accounts presentation (using the SNA numerical example) is given in table 33.1. The three current accounts are the goods and services account, the earned income account and the transfer income account. The earned income account corresponds to the allocation of earned income accounts in the SNA sequence of economic accounts, the transfer income account to the income transfers other than social transfers in kind account in the SNA sequence of economic accounts. The income accounts in *BPM7* only present the income transactions from the point of view of one party. Because there is no account corresponding to use of income in the external accounts, the adjustment for the change in pension and non-pension entitlements term appears as a single item after the transfer income account (cross-border pensions are relatively minor for most economies).

33.22 There are no exact parallels in the external accounts for the production account, the generation of income account and use of income account because the external accounts do not describe production, consumption (or capital formation). Products imported and exported are treated as simple transactions in all cases, whether the products will eventually be used for intermediate consumption, final consumption, capital formation, or will be re-exported.

33.23 Table 33.1 also shows the restricted form of the capital account in the external accounts as well as the financial account using the functional classification of financial transactions rather than the instrument classification used in the integrated framework of the SNA. Because the functional classification is a grouping of instruments, the two forms of presentation are strictly consistent. The functional classification is described below in section D, along with the explanation of the shaded cell for reserves liabilities.

Table 33.1: Overview of the balance of payments

	Credits/Revenues	Debits/Expenditures	Balance
Current account			
Goods and services account			
Goods	462	392	
Services	78	107	
Goods and services	*540*	*499*	*41*
Earned income account			
Remuneration of employees	6	2	
Interest and similar returns	13	21	
Dividends	13	14	
Withdrawals from income of quasi-corporations	4	3	
Reinvested earnings	14	0	
Earned income	*50*	*40*	*10*
Goods, services and earned income	*590*	*539*	*51*
Transfer income account			
Current taxes on income, wealth, etc.	1	0	
Non-life insurance premiums less service charges	2	11	
Non-life insurance claims	12	3	
Current international transfers	1	31	
Miscellaneous current transfers	1	10	
Transfer income	*17*	*55*	*-38*
Current account balance			*13*
Capital account			
Acquisition or disposals of non-produced assets	0	0	
Capital transfers	1	4	
Capital account balance			*-3*
Net lending (+) or net borrowing (-)			10
Financial account (by functional category)			
Direct investment	8	11	
Portfolio investment	18	14	
Financial derivatives (other than reserve assets) and ESOs	3	0	
Other investment	21	23	
Reserve assets	8		
Total changes in assets or liabilities	*58*	*48*	
Net lending (+) or net borrowing (-)			*10*
Statistical discrepancy			*0*

1. Goods and services account

33.24 The goods and services account consists only of imports and exports of goods and services because these are the only transactions in goods and services with a cross-border dimension. Goods and services are recorded when there is a change of economic ownership from a unit in one economy to a unit in another country. Although there is usually a physical movement of goods when there is a change of ownership, this is not necessarily the case. In the case of merchanting, goods may change ownership and not change location until they are resold to a third party.

33.25 The balance of payments gives emphasis to the distinction between goods and services. This distinction reflects policy interests, in that there are separate international treaties covering goods and services. It also reflects data issues, in that data on goods are usually obtained from customs sources, while data on services are usually obtained from surveys, payments records and other administrative sources.

Goods

33.26 The main source of data for goods is international merchandise trade statistics. International standards are given in the *International Merchandise Trade Statistics: Concepts and Definitions (IMTS)*. Goods are presented at an aggregate level in the balance of payments, whereas more detailed commodity breakdowns can be obtained from IMTS data.

33.27 *BPM7* identifies some sources of difference that may occur in some or all countries. It also recommends a standard reconciliation table to assist users in understanding these differences. One major source of difference is that the standards for IMTS use a CIF-type (cost, insurance and freight) valuation for imports, while the balance of payments as well as the integrated framework of the SNA use a uniform FOB valuation for both exports and imports. It is therefore necessary to exclude freight and insurance costs incurred between the customs frontier of the exporter and the customs frontier of the importer. Because of variations between the FOB-type valuation and actual contractual arrangements, some freight and insurance costs need to be rerouted. Further details are provided in chapter 15 on Supply and use tables.

33.28 The change of ownership basis used for the balance of payments means that goods entries will have a time of reporting consistent with the corresponding financial transactions. In *BPM7* as well as the integrated framework of the SNA, there are no exceptions to the change of ownership principle. In contrast, IMTS follow the timing of customs processing. While this timing is often an acceptable approximation, adjustments may be needed in some cases, such as goods sent on consignment.

33.29 Goods that change location from one economy to another but do not change economic ownership, while part of merchandise trade, do not appear in imports and exports in the balance of payments or the integrated framework of the SNA. Thus, goods sent abroad for processing, and returned after processing, do not appear as imports and exports of goods; only the fee agreed for processing appears as a service. In the case of goods sent abroad for processing with no change of ownership, the values of goods movements are included in IMTS, but changes in ownership are the primary presentation in the balance of payments and the integrated framework of the SNA. However, the values of goods movements are recommended as supplementary items to understand the nature of these arrangements. Further details of the recording of these processing arrangements are given in chapter 23 on Globalisation; see paragraphs 23.20 to 23.25.

33.30 Other adjustments to IMTS may be needed to bring estimates into line with the change of economic ownership of goods, either generally or because of the particular coverage of each country. Possible examples include merchanting, inverse merchanting, non-monetary gold, goods entering or leaving the territory illegally, goods procured in ports by carriers, and goods moving physically but where there has been no change of ownership.

Merchanting

33.31 Merchanting involves the purchase of goods by a resident (of the compiling economy) from a non-resident combined with the subsequent resale of the same goods to another non-resident without the goods being physically moved in and out of the compiling economy. Merchanting occurs for transactions involving goods where physical possession of the goods by the owner is unnecessary for the process to occur. Under such arrangements, the goods do not cross the border of the compiling economy, at any point, but the goods change ownership. The purchase is recorded as negative exports and the subsequent sale as positive exports, with the difference representing the trade margin of the merchant. Further details of the recording of merchanting are given in chapter 23; see paragraphs 23.11 to 23.19.

Factoryless goods arrangements

33.32 International sales of final goods under factoryless goods producer (FGP) arrangements are recorded under goods (general merchandise) and not under merchanting. The activity of the FGP is manufacturing. Further details of the recording of this activity are given in chapter 23; see paragraphs 23.26 to 23.30.

Re-exports

33.33 Re-exports are foreign goods (goods produced in other economies and previously imported with a change of economic ownership) that are exported with no substantial transformation from the state in which they were previously imported. Because re-exported goods are not produced in the economy concerned, they have less connection to the economy than other exports. Economies that are major trans-shipment points and locations of wholesalers often have large values of re-exports. Re-exports increase the figures for both imports and exports; and, when re-exporting is significant, the proportions of imports and exports to economic aggregates increase. It is therefore useful to show re-exports separately. Goods that have been imported and are waiting to be re-exported are recorded in inventories of the resident economic owner.

Services

33.34 Standards for services trade are shown in the *Manual on Statistics of International Trade in Services (MSITS),* which is fully harmonized with the external accounts.

33.35 As noted above, goods sent abroad for processing, and returned after processing, do not involve a change of ownership, and are thus not recorded as imports and exports of goods. Instead, the fees for processing appear as either imports of services (payments for processing) or exports of services (receipts from processing), and are included in item (a) below.

33.36 In the external accounts, trade in services detail is produced for the following 17 standard components of services:

a. Manufacturing services on physical inputs owned by others;

b. Maintenance and repair services n.i.e.;

c. Transport;

d. Travel;

e. Construction;

f. Insurance and pension services;

g. Financial services;

h. Charges for the use of intellectual property n.i.e.;

i. Telecommunications services

j. Computer and information services;

k. Research and developments services;

l. Professional and management consulting services;

m. Non-financial intermediation services;

n. Operating lease services;

o. Technical, environmental, and other business services;

p. Personal, cultural and recreational services; and

q. Government goods and services n.i.e.

33.37 Most components of trade in services are product-based, derived from the more detailed classes of the *CPC*. However, three of the standard components are transactor-based items, that is, they relate to the acquirer or provider, rather than the product itself. These categories are travel, construction and government goods and services n.i.e.

33.38 Travel covers all goods or services acquired by non-residents during visits whether for own use or to give away. Travel includes goods, local transport, accommodation, meals and other services. Construction covers both the total value of the product delivered by the contractor and any goods and services sourced locally by the contractor that are not recorded in imports and exports of goods. Government goods and services n.i.e. cover a range of items

that cannot be allocated to more specific headings.

2. The earned income account

33.39 The entries in the earned income account are concerned with remuneration of employees and property income, exactly as in the allocation of earned income account in the SNA sequence of economic accounts. Payments of taxes on production by residents and receipts of subsidies by residents from the domestic government are recorded in the generation of income account, an account that does not form part of the balance of payments. Any payments of taxes on production payable by a resident to another government as well as any subsidy receivable by a resident from another government are recorded in the earned income account of the balance of payments. The matching entries for the domestic government are shown in the SNA in the allocation of earned income account and for foreign governments in the rest of the world column of that account, and in the earned income account of the balance of payments.

33.40 ***Rent (D42) relates to the income receivable by the owner of a non-produced natural resource or another non-financial asset (the lessor or landlord) for putting the asset at the disposal of another institutional unit (a lessee or tenant) for use in production.*** Examples concern payments related to the use of marketing assets, land and other non-produced natural resources. Rent on land and other natural resources may arise in cross-border situations, but rarely, because all land and other natural resources are deemed to be owned by residents, if necessary by creating a notional resident unit. An example where rent on natural resources may be recorded in the external accounts may be fishing rights in territorial waters provided to foreign fishing fleets. It is common in the external accounts to use the term investment income meaning property income excluding rent. Investment income therefore reflects income arising from the ownership of financial assets and the disaggregation of investment income matches that of financial assets and liabilities so that rates of return can be calculated.

33.41 In *BPM7*, flows of interest and similar returns are measured on exactly the same basis as in the integrated framework of the SNA with implicit financial services on loans and deposits separated and treated as an import or export of financial services.

Income of foreign direct investment enterprises

33.42 The role of foreign direct investment enterprises is particularly important and reflected in both the flows and positions in the external accounts. There is extended discussion on the identification and role of foreign direct investment enterprises in section D.

33.43 As explained in paragraphs 8.143 to 8.146, in the case of a foreign direct investment enterprise, it is assumed that a proportion of the enterprise's retained earnings is distributed to the direct investor as a form of investment income. The proportion corresponds to the direct investor's holding in the enterprise.

33.44 Retained earnings are equal to the direct investors' shares (in terms of the equity held) of distributable income, less amounts declared for dividend distribution to the foreign direct investor, or less the withdrawals from income of the quasi-corporation by the foreign direct investor, with distributable income being equal to the entrepreneurial income, plus all current transfers receivable, less all current transfers payable, and less the adjustment for the change in the entitlements relating to a pension or other social insurance scheme of that corporation. Reinvested earnings accrued from any immediate subsidiaries are included in the property income receivable by the foreign direct investment enterprise.

33.45 Reinvested earnings may be negative, for example where the enterprise makes a loss or where dividends are distributed from accumulated earnings, or in a quarter when an annual dividend is paid. In this respect, it can be noted that payments arising from the sales of financial or non-financial assets are treated as a withdrawal of equity. The treatment of dividends for foreign direct investment differs from the treatment of those for domestic direct investment; see paragraphs 8.137 and 8.138.

33.46 For a foreign direct investment enterprise that is 100 per cent owned by a non-resident, reinvested earnings are equal to retained earnings and the net saving of the enterprise is exactly zero.

3. Transfer income account

33.47 The entries in this account are current transfers. The range of entries corresponds exactly to those in the income transfers other than transfers in kind account in the SNA sequence of economic accounts. Several of these are particularly important in the external accounts, especially current international cooperation and remittances sent to their home countries by individuals working abroad.

33.48 Cross-border personal transfers are household-to-household transfers and are of interest because they are an important source of international funding for some countries that provide large numbers of long-term workers abroad. Personal transfers include remittances by long-term workers, that is, those who have changed their economy of residence.

33.49 Other workers, such as border and seasonal workers do not change their economy of residence from the home economy. Instead of transfers, the international transactions of these workers include remuneration of employees, taxes and travel costs. A supplementary presentation of personal remittances brings together personal transfers with these related items. Personal remittances include personal transfers, remuneration of employees less taxes and travel, and capital transfers between households. For further details, see annex 4 of *BPM7*.

33.50 Insurance flows, especially flows relating to reinsurance, can be important internationally. These flows are recorded in the same way as in the integrated framework of the SNA, both as regards the separation of a financial service charge and the treatment of direct insurance and reinsurance flows separately and not on a consolidated basis. Detailed information on this separation is given in section A of chapter 24 on Insurance and pensions.

4. Balancing items in the current accounts of the external accounts

33.51 The structure of the balancing items in the balance of payments is somewhat different from that in the SNA sequence of economic accounts, in that each account has its own balancing item and another that carries down to the next account. To illustrate, the earned income account has its own balancing item (external balance of earned income) and a cumulative balance (external balance of goods, services and earned income). The external balance of earned income corresponds to balance of this account and is the item feeding into GNI. The current external balance corresponds to saving by the rest of the world relative to the domestic economy. The balancing items in the *BPM7* structure of accounts are shown in table 19.3, reproduced here for convenience as table 33.2.

5. The capital account

33.52 The elements of the capital account subject to international transactions are more restricted than those covered in the SNA sequence of economic accounts. Transactions in produced assets are not recorded in the capital account, because, as explained earlier, they are recorded as exports and imports of goods (and possibly services). Therefore, the capital account only includes acquisitions and disposals of non-produced non-financial assets and capital transfers, including unusually large non-life insurance claims and other major compensatory payments, capital taxes, investment grants, debt forgiveness and one-off guarantees and other types of debt assumption.

33.53 Like the SNA sequence of economic accounts, net lending or net borrowing is the balancing item for the sum of the current and capital accounts and for the financial account. As in the SNA sequence of economic accounts, it covers all instruments used for providing or acquiring funding, not just lending and borrowing. Conceptually, it has the same value as the national accounts item for the total economy, and the same as the national accounts item for the rest of the world but with the sign reversed.

Table 33.2: Balancing items in the external accounts in relation to the SNA sequence of economic accounts

Expenditures			Revenues
Rest of the world	Code	Transactions and balancing items	Rest of the world
		Goods and services account	
	P7	Imports of goods and services	499
540	P6	Exports of goods and services	
- 41		*External balance of international trade in goods and services*	
		Allocation of earned income account	
6	D1	Remuneration of employees	2
	D2	Taxes on production and imports	
	D3	Subsidies	
44	D4	Property income	38
- 10		*External balance of earned incomes*	
- 51		*External balance of goods, services and earned incomes*	
		Income transfers other than transfers in kind account	
17		Current transfers	55
38		*External balance of transfer income*	
- 13	B12	*Current external balance*	
		Capital account	
0	NF1	Acquisitions less disposals of non-produced non-financial assets	
	D9r	Capital transfers, receivable	4
	D9p	Capital transfers, payable	- 1
3		*External capital account balance*	
- 10		*Net lending (+) / net borrowing (–)*	

6. The financial account and international investment position

33.54 The financial account of the balance of payments and the international investment position (IIP) are of particular importance because they provide an understanding of international financing as well as of international liquidity and vulnerability. The integrated IIP statement parallels the relevant accumulation accounts in the SNA sequence of economic accounts, as shown in table 33.3. It combines the opening and closing balance sheet positions of the IIP with the financial transactions, the other changes in volume of assets and labilities, and revaluations..

33.55 Financial transactions and positions with non-residents are presented in the SNA sequence of economic accounts on an asset and liability basis, by instrument. However, the primary classification of the external accounts is based on functional categories. The functional categories, described in section D, convey more information about the motivation and relationship between the parties, which are of interest for international economic analysis. The functional categories are further subdivided by instrument and institutional sector, which makes it possible to link them to the corresponding item in the SNA sequence of economic accounts and in monetary and financial statistics. The institutional sector classification is the same as in the SNA sequence of economic accounts, although it is usually abbreviated (to five sectors in the standard components). In addition, a supplementary subsector is used for monetary authorities, which is a functional subsector linked to international reserve assets. It covers the central

bank and any parts of general government or financial corporations other than the central bank that hold international reserve assets, so it is relevant for countries where some or all reserves are held outside the central bank.

33.56 The part of the balance sheets covered in the external accounts is called the IIP. The terminology highlights the specific components of the national balance sheet which are included. The IIP covers only financial assets and liabilities because, to be included in the IIP, there must be a cross-border element. In the case of financial claims, the cross-border element arises when one party is a resident and the other party is a non-resident. In addition, while gold bullion is an asset that has no counterpart liability, it is included in the IIP when held as a international reserve asset, because of its role as a means of international payments. However, non-financial assets are excluded as they do not have a counterpart liability or other international aspect.

33.57 The balancing item on the IIP is the net IIP. The net IIP plus non-financial assets in the national balance sheet equal national net worth, with all resident-to-resident financial claims accounted for in the national balance sheet.

33.58 The same level of detail is used for investment income and the IIP. As a result, average rates of return can be calculated. Rates of return can be compared over time and for different instruments and maturities. For example, the trends in return on direct investment can be analysed, or the return can be compared with other instruments.

7. The other changes in assets accounts

33.59 External assets and liabilities may be subject to all the possible types of other changes in the volume of assets and liabilities and to revaluation changes. For example, entries are made in the other changes in volume of assets and liabilities account for monetization and de-monetization of gold, or for the unilateral cancellation of a claim by a debtor. Because instruments are often denominated in foreign currencies and analysis of the effect of exchange rate movements is particularly important, the breakdown of revaluations into exchange rate changes and other factors is essential for analysis.

Table 33.3: Overview of Integrated International Investment Position Statement

	Opening position	Transactions (Financial account)	Other changes in the volume of assets and liabilities	Revaluation	Closing position
Assets (by functional category)					
Direct investment	78	8	0	1	87
Portfolio investment	190	18	0	2	210
Financial derivatives (other than reserve assets) and ESOs	7	3	0	0	10
Other investment	166	21	0	0	187
Reserve assets	833	8	0	12	853
Total	*1 274*	*58*	*0*	*15*	*1 347*
Liabilities (by functional category)					
Direct investment	210	11	0	2	223
Portfolio investment	300	14	0	5	319
Financial derivatives (other than reserve assets) and ESOs	0	0	0	0	0
Other investment	295	23	0	0	318
Total	*805*	*48*	*0*	*7*	*860*
Net IIP	*469*	*10*	*0*	*8*	*487*

D. External accounts functional categories

33.60 The external accounts functional categories are the primary classification used for each of investment income, financial transactions and positions in the external accounts. The following five categories are identified:

a. (foreign) direct investment;

b. portfolio investment;

c. financial derivatives (other than reserves) and employee stock options;

d. other investment; and

e. international reserve assets.

33.61 Detailed definitions are given later in this section. The functional categories are built on the classification of financial instruments discussed in chapter 12 on Financial account and chapter 14 on Balance sheet, but with an additional dimension that takes into account some aspects of the relationship between the parties and the motivation for investment. As a result, the different categories exhibit different patterns of behaviour. For example, there is a different type of relationship between the parties for direct investors compared to portfolio investors holding equity. Direct investment is related to control or a significant degree of influence, and tends to be associated with a lasting relationship although it may be short-term. In addition to financial resources, direct investors often supply additional factors such as know-how, technology, management and marketing. As well, related companies are more likely to trade with and lend to each other. In contrast, portfolio investors typically have a smaller role in the decision-making of the enterprise, with potentially important implications for future flows, and for the volatility of the price and volume of positions. Portfolio investment differs from other investment in that it provides a direct way to access financial markets, and so can provide liquidity and flexibility.

33.62 International reserve assets include a range of instruments that are shown under other categories when not owned by monetary authorities or other units authorized by the monetary authorities and sometimes even when held by monetary authorities. However, as international reserve assets they are identified as being available to meet international payments financing needs and undertake market intervention to influence the exchange rate.

33.63 The instrument classification alone does not fully reflect these behavioural differences. For example, a loan can appear under (foreign) direct investment or other investment, but the different nature of the relationship between the parties means that the risks and motivations behind the transaction tend to differ. A foreign direct investment loan is more likely to be provided and generally involves less vulnerability on the part of the borrowing economy because of the relationship between the parties. Table 33.4 shows the relationship between instruments and functional categories.

Table 33.4: Link between Financial Assets Classification and Functional Categories

SNA Financial Assets and Liabilities Classification	Functional categories				
	Direct investment	Portfolio investment	Financial derivatives (other than reserves) and ESOs	Other investment	Reserve assets
Monetary gold					X
Special drawing rights				X*1	X*1
Currency and deposits:					
Currency				X	X
Crypto assets with a corresponding liability designed to act as a general medium of exchange				X	
Transferable deposits	X			X	X
Other deposits	X			X	X
Debt securities	X	X			X
Loans	X			X	X
Equity and investment fund shares/units:					
Equity:					
Listed shares	X	X			X
Unlisted shares	X	X			x
Other equity and equity in international organizations	X			X	
Investment fund shares/units:					
Money market fund shares/units		X			X
Non-MMF investment fund shares/units		X		x	X
Insurance, pension and standardized guarantee schemes:					
Non-life insurance technical reserves	x			X	
Life insurance and annuity entitlements	x			X	
Pension entitlements				X	
Claims of pension funds on pension sponsors	X			X	
Entitlements to non-pension benefits				X	
Provisions for calls under standardized guarantees	X			X	
Financial derivatives and employee stock options:					
Financial derivatives			X		X
Employee stock options			X		
Other accounts receivable/payable:					
Trade credit and advances	X			X	
Emission permits	x			X	
Other accounts receivable/payable n.e.c.	X			X	

1. SDR assets are international reserve assets; SDR liabilities are other investment.
X shows applicable functional categories; x shows cases that are considered to be relatively uncommon.

1. (Foreign) direct investment

33.64 ***(Foreign) direct investment is a category of cross-border investment associated with a resident in one economy having control or a significant degree of influence on the management of an enterprise that is resident in another economy. Ownership of 10 percent or more of the voting power is evidence of a direct investment relationship.*** As well as the equity that gives rise to control or influence, direct investment also includes associated debt (except debt between affiliated financial intermediaries).

33.65 Control is determined to exist if the direct investor owns more than 50 per cent of the voting power in the direct investment enterprise. Such an enterprise is called a subsidiary. A significant degree of influence is determined to exist if the direct investor owns from 10 to 50 percent of the voting power in the direct investment enterprise. Such an enterprise is called an associate. In order to achieve bilateral consistency and avoid subjective decisions about actual control or influence, these operational definitions should be used in all cases.

33.66 As well as immediate foreign direct investment relationships, there may be indirect foreign direct investment relationships, as a result of a chain of ownership. In addition, fellow enterprises may be an important part of foreign direct investment. (Fellow enterprises are enterprises that have less than ten per cent equity in each other but which are under the control or influence of the same investor who is a foreign direct investor in at least one of the fellows.) Reverse investment arises when foreign direct investment enterprises invest in their own direct investors but have less than ten per cent of the voting power in the direct investor.

33.67 Foreign direct investment includes debt between the parties as well as equity except in the case of debt positions between related financial corporations (e.g., insurance companies and pension funds). Such debt between related companies may be called inter-company lending. One of the features of a group of foreign direct investment enterprises is that its members are more likely to extend loans and trade credit to each other than are unrelated enterprises.

33.68 Because of the relationship of control or influence, the foreign direct investor's share of retained earnings of a subsidiary or associate is imputed as first being paid out as an income flow and then reinvested as a financial transaction. The income item is called reinvested earnings; the corresponding equal entry in the financial account is called reinvestment of earnings. Reinvested earnings are defined as the foreign direct investor's share in the retained earnings of the enterprise, and so are consistent with the corresponding items in the SNA sequence of economic accounts. A consequence is that there will be no net saving by an enterprise that is 100 per cent foreign owned, because all saving will be attributed to its direct investor.

33.69 Those direct investment enterprises that are controlled by non-residents correspond to the subsectors of foreign-controlled enterprises in the SNA sequence of economic accounts. However foreign direct investment enterprises include those not subject to control from abroad but still subject to a significant degree of influence. The foreign-controlled enterprises in the SNA sequence of economic accounts are limited to inward direct investment, while the external accounts are also concerned with outward direct investment. Reinvested earnings on foreign direct investment in the SNA sequence of economic accounts have the same scope as in the balance of payments (although "foreign" is not used because it is redundant in the context of the external accounts).

33.70 In addition to the statistics on the international financial flows associated with foreign direct investment, information on foreign-controlled enterprises is provided through statistics on the Activities of Multinational Enterprises (AMNE statistics) and the closely related Foreign AffiliaTes Statistics (FATS). These cover items such as exports, imports, domestic sales and domestic purchases of goods and services, labour input and value added. They therefore provide a wider picture of the operations of multinational enterprises. Additional information is available in *Recommendations Manual on the Production of Foreign AffiliaTes Statistics*, the *Handbook on Economic Globalisation Indicators* and the *MSITS*.

2. (Foreign) portfolio investment

33.71 ***(Foreign) portfolio investment is defined as cross-border flows and positions involving debt or equity securities, other than those included in direct investment or (international) reserve assets***. Securities are instruments designed for convenient negotiability between parties, such as shares, bonds, notes and money market instruments. The negotiability of securities is a way of facilitating trading, allowing them to be held by different parties during their lives. Negotiability allows investors to diversify their portfolios and to withdraw their investment readily.

33.72 Portfolio investment typically depends on organized financial markets and associated bodies such as dealers, exchanges and regulators. In contrast, the parties to foreign direct and other investment instruments usually deal directly with each other. The negotiability of (foreign) portfolio investment transactions makes them a convenient and flexible investment channel, but also may be associated with volatility.

3. (Foreign) financial derivatives (other than reserves) and employee stock options

33.73 The definition of the functional category (foreign) financial derivatives (other than reserves) and employee stock options largely coincides with the corresponding financial instrument class, discussed in chapter 12 on Financial account, chapter 14 on Balance sheet and chapter 25 on Selected issues in financial instruments. The difference in coverage between the functional category and the financial instrument is that financial derivatives associated with international reserve asset management are excluded from the functional category and included in international reserve assets. This category is identified separately because it relates to risk transfer, rather than supply of funds or other resources.

4. Other (foreign) investment

33.74 ***Other (foreign) investment is a residual category that includes flows and positions other than those included in (foreign) direct investment, (foreign) portfolio investment, (foreign) financial derivatives and employee stock options and (international) reserve assets***. It includes the remainder of the following financial instruments:

a. other equity;

b. currency and deposits;

c. loans (including use of IMF credit and loans from the IMF);

d. non-life insurance technical reserves, life insurance and annuity entitlements, pension entitlements and provisions for calls under standardized guarantees;

e. trade credit and advances;

f. other accounts receivable/payable; and

g. SDR allocations (SDR holdings are included in international reserve assets).

5. International reserve assets

33.75 ***International reserve assets are those external assets, including monetary gold, that are readily available to and controlled by monetary authorities for meeting balance of payments financing needs, for intervention in exchange markets to affect the currency exchange rate, and for other related purposes (such as maintaining confidence in the currency and the economy, and serving as a basis for foreign borrowing). International reserve assets must be denominated and settled in foreign currency***. Underlying the concept of international reserve assets are the notions of "control" and "availability for use" by the monetary authorities. The standardized statistical definition of net international reserves is international reserve assets less short-term net foreign currency claims.

33.76 In general, only external claims actually owned by the monetary authorities can be classified as international reserve assets. Nonetheless, ownership is not the only condition that confers control. In cases where institutional units (other than the monetary authorities) in the reporting economy hold legal title to external foreign currency assets and are permitted to do so only on terms specified by the monetary authorities or only with their express approval, such assets can be considered international reserve assets. This is because such assets are under the direct and effective control of the monetary authorities.

33.77 International reserve assets must be readily available in the most unconditional form. An international reserve asset is liquid in that the asset can be bought, sold and liquidated for foreign currency (cash) with minimum cost and time, and without unduly affecting the value of the asset. This concept refers to both non-marketable assets, such as demand deposits, and marketable assets, such as securities where there are ready and willing sellers and buyers. In order to be readily available to the authorities to meet balance of payments financing needs and other related purposes under adverse circumstances, international reserve assets generally should be of high quality.

33.78 International reserve assets are limited to assets, but a memorandum item is provided for reserve-related liabilities that are included in other functional categories, mainly portfolio and other investment. (This is why the liabilities cell for reserves in table 33.1 is shaded.)

E. Special external accounts considerations

1. Global imbalances

33.79 In recent years, the IMF has done extensive work on global statistical imbalances. By summing data on transactions (goods, services, transfers, etc.) and (changes in) financial stocks between residents and non-residents for all economies, global totals can be derived. (Although as a functional category, international reserve assets have no counterpart liability, the constituent instruments can be allocated to their counterpart liabilities for an exercise of the type described here.) The extent of actual inconsistency has been used to identify systematic biases that can indicate reporting problems, for example, that services credits have higher coverage than services debits.

2. Exceptional financing

33.80 Exceptional financing brings together financial arrangements made by the authorities to meet balance of payments needs. Exceptional financing therefore identifies transactions according to their motivation. In addition, the incurrence of arrears is included in exceptional financing. Although it is not a transaction, it is an action the monetary authorities may take to manage their payments requirements.

33.81 Exceptional financing is presented in the "analytic" presentation of the balance of payments, as published in the Balance of Payments Statistics Yearbook (International Monetary Fund, annual). In this presentation, entries relating to reserves, IMF credit and exceptional financing are presented "below-the-line" while all the other entries, which will require funding, are shown above-the-line. This presentation facilitates analysis of the monetary authorities' international liquidity.

33.82 There is more discussion on exceptional financing in annex 1 of *BPM7*.

3. Debt instruments

33.83 It is useful to group the different types of debt instruments, because debt instruments have particular implications for international liquidity and risk. Debt instruments are those instruments that require the payment of principal or interest or both at some point(s) in the future. Debt instruments comprise special drawing rights, currency and deposits, debt securities, loans, insurance technical reserves, provision for calls under standardized guarantees and pension entitlements (possibly including some other non-pension entitlements related to social insurance), and other accounts receivable/payable. Financial derivatives are not debt instruments, but an overdue obligation on a financial derivative contract is classified as an account payable and thus is included as a debt instrument.

33.84 Debt instruments can be contrasted with equity and investment fund shares/units in the nature of the liability and risk. While equity gives a residual claim on the assets of the unit, a debt instrument involves an obligation to pay an amount of principal or interest or both usually according to a predefined formula, which means that the creditor has a more limited risk exposure. In contrast, the return on equity is largely dependent on the economic performance of the issuer, so the holders bear more of the risk. Additional information is provided in the *External Debt Statistics Guide for Compilers and Users*.

33.85 Debt instrument flows and positions are shown divided between long-term and short-term. Primarily, this split is according to their original maturity, that is, the period from issue until contractually scheduled final payment. In addition, because of the external accounts concern with international liquidity issues, liability data can also be prepared on the basis of remaining maturity, that is, the period from the reference date until contractually scheduled final payment, on a supplementary basis.

4. Debt restructuring

33.86 ***Debt restructuring (also referred as debt reorganization) is defined as an arrangement that involves both the creditor and the debtor (and sometimes third parties) in altering the terms established for servicing an existing debt***. Governments are often involved in debt restructuring, as a debtor, or a creditor or a guarantor, but debt restructuring can also involve the private sector, such as through debt exchanges. Debt restructuring involves a range of different types of transactions as well as valuation and timing issues.

33.87 The four main types of debt restructuring are:

a. Debt forgiveness; a reduction in the amount of, or the extinguishing of, a debt obligation by the creditor via a contractual arrangement with the debtor;

b. Debt rescheduling or refinancing; a change in the terms and conditions of the amount owed, which may or may not result in a reduction in burden in present value terms;

c. Debt conversion; the creditor exchanges the debt claim for something of economic value, other than another debt claim on the same debtor, such as debt-for-equity swaps, debt-for-real-estate swaps, debt-for-development swaps, debt-for-nature swaps, and for debt prepayments, debt-for-cash; and

d. Debt assumption and debt payments on behalf of others when a third party is also involved.

Debt forgiveness across economies often involves government and there is further guidance on the treatments of these arrangements in annex 2 of *BPM7* and specialized manuals such as the *External Debt Statistics Guide for Compilers and Users*.

33.88 Debt repudiation, write-offs and write-downs of debt on a unilateral basis are not treated as transactions in either the SNA sequence of economic accounts or *BPM7* and so are not considered part of debt restructuring.

5. Regional arrangements, including currency unions

33.89 Regional arrangements include:

a. monetary and currency unions, which provide for a single monetary policy across an area. Some of the same issues apply when one economy unilaterally adopts the currency of another economy, such as with "dollarization";

b. economic unions, which harmonize certain economic policies to foster greater economic integration; and

c. customs unions, which have common tariff and other trade policies with non-member economies.

33.90 *BPM7* gives detailed guidance on the treatments of these arrangements. Among the issues that are dealt with are the production of consolidated data for a union as a whole, the treatment of regional organizations, including the central bank, treatment of bank notes in a currency union, and revenue-sharing arrangements in a customs union. The existence of a currency union central bank (common currency and single monetary policy) does not preclude the existence of country central bank institutional units within the union. The country's central bank institutional units are deemed to be resident institutional units in the economies where they are located. However, the residence of the currency union central bank is the region to which the union applies.

6. Currency conversion, including multiple exchange rates

33.91 Exchange rates must be considered carefully when measuring international transactions and positions, as changes can distort measurement. Flows denominated in a foreign currency are converted to their value in the domestic currency at the rate prevailing when the flows take place, and positions are converted at the rate prevailing on the balance sheet date. The midpoint between the buying and selling rates should be used at the time of transaction (for transactions) and at the close of business on the reference date for positions. The difference between buying/selling prices and midpoint prices represents a service charge and should be recorded as such.

33.92 In principle, the actual exchange rate applicable to each transaction should be used for currency conversion. The use of a daily average exchange rate for daily transactions usually provides a very good approximation. If daily rates cannot be applied, average rates for the shortest period should be used. Some transactions occur on a continuous basis, such as the accrual of interest, over a period of time. For such flows, therefore, an average exchange rate for the period in which the flows occur should be used for currency conversion.

33.93 Under a multiple exchange rate regime, two or more exchange rates are applicable to different categories of transactions; the rates favour some categories and discourage others. Such rates incorporate elements similar to taxes or subsidies. Because the multiple rates influence the values and the undertaking of transactions expressed in domestic currency, net proceeds implicitly accruing to authorities as a result of these transactions are recorded

as implicit taxes or subsidies. The amount of the implicit tax or subsidy for each transaction can be calculated as the difference between the value of the transaction in domestic currency at the actual exchange rate applicable and the value of the transaction at a unitary rate that is calculated as a weighted average of all official rates used for external transactions. For conversion of positions of external financial assets and liabilities in a multiple rate system, the actual exchange rate applicable to specific assets or liabilities at the beginning or end of the accounting period is used.

33.94 Parallel (unofficial) or black market rates cannot be ignored in the context of a multiple rate regime and can be treated in different ways. For instance, if there is one official rate and a parallel market rate, the two should be handled separately. Transactions in parallel markets should be converted using the exchange rate applicable in that market. If there are multiple official rates and a parallel rate, the official rates and the parallel rate should be treated as distinct markets in any calculation of a unitary rate. Transactions effected at the parallel rate usually should be separately converted at that rate. However, in some instances, parallel markets may be considered effectively integrated with the official exchange rate regime. Such is the case when most or all transactions in the parallel market are sanctioned by the authorities or when the authorities actively intervene in the market to affect the parallel rate, or do both. In this instance, the calculation of the unitary rate should include both the official and parallel market rates. If only limited transactions in the parallel market are sanctioned by the authorities, the parallel rate should not be included in the calculation of a unitary rate.

F. Extended and thematic accounts and tables

Chapter 34: Measuring well-being

A. Introduction

34.1 Improving and sustaining the well-being of people and communities is the key focus across the majority of policy areas of government. As introduced in chapter 2 on National accounts and its contribution to measuring well-being and sustainability, in terms of the role of the SNA in assessing well-being, "well-being" refers to the current material well-being of households. Within the scope of material well-being are measures of household income, consumption and wealth, labour and work (including unpaid household service work), education, health care and housing. The measurement of the sustainability of material well-being, including the extent to which the needs of current and future generations are satisfied is discussed in chapter 35 on Measuring the sustainability of well-being.

34.2 As introduced in chapter 2, there are four aspects of most relevance in framing the measurement of well-being. First, the goods and services consumed by people as recorded in measures of household actual final consumption (i.e., household final consumption expenditure and goods and services received via social transfers in kind), including the consumption of goods produced for own final use and from the informal economy. Second, the goods and services consumed or benefits enjoyed by people that are outside the scope of the production boundary applied in the integrated framework of national accounts. These will include goods, services and benefits arising from unpaid household service work, ecosystem services sourced from the environment, and the connections and relationships people hold with each other. Third, people's functioning and capabilities, including but not limited to the freedom and possibilities they have to satisfy their needs. Fourth, the distribution of well-being across different groups within the population.

34.3 The links between these aspects of well-being are depicted in figure 34.1. The first column concerns aspects related to material well-being that are fully within scope of the integrated framework of the SNA, including its production and asset boundary, in particular income (reflected in measures such as net national income (NNI) and household disposable income (HDI)), final consumption, labour and the distribution of household income, consumption and wealth.

34.4 The second column focuses on those aspects of material well-being whose measurement is incorporated in thematic and extended accounts that are outside the accounts and tables of the integrated framework of the SNA, but which often have direct connections to data within the integrated framework. These aspects include unpaid household service work, ecosystem services, health care and education and training activity.

34.5 The third column lists a range of other aspects which are commonly considered in the assessment of well-being, but which are out of scope of the discussion of material well-being within the context of the integrated framework of national accounts. This includes aspects such as health outcomes (measured, for example, in relation to life-expectancy and quality adjusted life years), governance, social cohesion, crime and justice outcomes, and subjective well-being.

34.6 The boundary between the second and third columns is shown as a dashed line to indicate that a definitive measurement boundary on material well-being has not been established. At the same time, it is recalled that the SNA has a focus on the measurement of outputs from economic activity rather than outcomes. As a result, the SNA does not organize data that supports direct measurement of, for example, the quality of life of households. It is also noted that across all aspects, the measurement of the distribution of outcomes and activities across households will be relevant.

34.7 The depiction in figure 34.1 reflects that the measurement of well-being described in this chapter does not provide a single overarching framework. Further, the aspects included in the first and second columns are those that have been most developed in accounting terms. It is acknowledged that there are examples of statistical development for the aspects of well-being included in the third column and the SNA framework remains open to the possibility of further extension and application of accounting approaches concerning other aspects of well-being in the future.

Figure 34.1: Aspects of well-being

34.8 For the measurement of material well-being, chapter 2 on National accounts and its contribution to measuring well-being and sustainability describes two primary avenues through which the SNA can contribute to the discussion. The first avenue recognizes that in addition to GDP, there is a very wide range of data and aggregate measures contained within the integrated framework of the SNA that can be used as inputs to the analysis of material well-being. The national level information presented in the integrated framework can also be supplemented with data on the distribution of these economic measures across groups of economic units.

34.9 The second avenue recognizes that a significant part of the development of frameworks and approaches to the measurement of material well-being has involved extending and adapting the accounting rules and structures presented in the integrated framework of the SNA, to organize data on various aspects of material well-being. These developments recognize the potential of accounting-based approaches and the advantages of ensuring that data about the environmental and social dimensions can be readily connected to data from the SNA's integrated framework.

34.10 Chapter 2, section B.4, provides a description of the links between accounting-based measures of material well-being and other measures of material well-being or economic welfare. It explains that the position of the integrated framework of the SNA is that while the change in GDP in volume terms is often taken as a measure of changes in material well-being, the SNA makes no claim that this is a preferred or appropriate measure. There are a number of conceptual matters and accounting conventions that are adopted in the integrated framework of the SNA that are detailed in that section that are relevant to understanding the role of the integrated framework and thematic and extended accounts in supporting the analysis of material well-being. The primary issue is that the set of goods and services included within the scope of GDP does not cover all goods and services which may be considered relevant for measuring material well-being. These issues are not discussed further in this chapter.

34.11 Further, in measuring these aspects of well-being, the distinction between objective and subjective measurement is relevant. Objective measures of well-being concern measures of various elements of people's lives such as income and consumption, health, knowledge and skills, use of time, and social connections. Subjective measures of well-being concern self-reported well-being, i.e., evaluations, both positive and negative, that people make about their lives and people's affective reactions to and reflections on their own experiences. This chapter focuses on the organization of data using accounting approaches to support objective measures of material well-being. The development of subjective measures of well-being is certainly relevant but is outside the scope of the SNA.

34.12 It is common for the measurement of well-being to focus on the development of a set of indicators and sometimes the indicators are aggregated to derive composite indicators. Where indicator-based approaches to measuring material well-being are used, the data organized using accounting-based approaches can readily support the organization of data for the derivation of indicators. This chapter does not discuss the content or derivation of composite indicators.

34.13 The discussion of objective measures of material well-being is presented across four sections. In section B, the measurement of material well-being in terms of income, consumption and wealth is considered commencing with an overview of the range of aggregate economic measures of income, consumption and wealth available in the integrated framework of national accounts and introducing alternative measures of income and wealth that apply different concepts to those applied in the integrated framework of the SNA.

34.14 Section C discusses the distribution of income, consumption and wealth across households. To support this discussion, an overview of the scope and definition of households and household groups is provided. Detail on these and other aspects of measuring the household sector are elaborated in chapter 32 on Households.

34.15 In section D, the measurement of material well-being from the perspective of households as consumers and producers is considered, including the potential to extend the production boundary to incorporate flows that are not recorded in the integrated framework of national accounts. From a consumption perspective, the discussion highlights the range of goods and services consumed by households that contribute to material well-being both within and beyond the production boundary applied in the integrated framework. From a production perspective, the discussion is framed in relation to the different forms of work that people undertake, including paid employment and unpaid household service work. By placing these various forms of work in a common context, a significant range of information can be organized including both labour input within the production boundary of the integrated framework and contributions of households beyond that production boundary.

34.16 In section E, the discussion focuses on two specific aspects of material well-being, namely health and education. The discussion of these aspects can be significantly supported by rich, accounting-based, data sets. Measuring material well-being associated with education is considered through accounting for expenditures on education and training activity. Measuring material well-being associated with health focuses on accounting for health care systems. Accounting for both of these areas can be directly linked to accounting for human capital which is discussed in chapter 35 on Measuring the sustainability of well-being.

34.17 The discussion of accounting for health and education in section E does not cover the measurement of the outcomes arising from consumption, for example, the measurement of health outcomes using measures of the quality of life; see paragraph 2.45. Further discussion on the measurement of the quality, and the impact on outcomes, of outputs supplied in activities such as health and education is included in chapter 18 on Measuring prices, volumes and productivity.

34.18 This chapter demonstrates the potential of accounting-based approaches to support the organization of relevant data, to build linkages between macro and micro perspectives on material well-being (e.g., through the measures of household distributions of income, consumption and wealth and the measures of unpaid household service work) and to identify stronger connections between measurement in the economic and social dimensions of overall well-being. Nonetheless, as highlighted in figure 34.1, the aspects of material well-being discussed in this chapter cover many, but by no means all, aspects relevant in the discussion of well-being.

34.19 The descriptions of measurement and accounting in this chapter generally represent extensions beyond the integrated framework of the SNA. These extensions have been developed such that they can be implemented as individual accounts or used in combination with other accounts and data. The SNA provides conceptual guidance to facilitate international comparability and with the ambition that the SNA including its extensions will be implemented by as many countries as possible. However, the SNA does not set expectations or provide direct recommendations on the accounts that should be compiled and it is recognized that not all countries will be able to provide the suggested degree of detail. Those countries that can implement the various accounts should follow the descriptions provided in this chapter to support comparability of data and methods. The choice of what to implement should take into consideration a country's economic, social and environmental context, the current and future priority policy issues, and resources available for data collection and compilation.

B. Aggregate economic measures of material well-being

34.20 This section considers the measurement of material well-being in terms of income, consumption and wealth in line with the definitions of these concepts in the integrated framework of national accounts. There is a focus on aggregate measures of income, consumption and wealth that can be derived from the sequence of economic accounts, and the discussion identifies a wide range of indicators other than the most common GDP per capita. The section also summarizes a number of alternative measures of income, consumption and wealth that apply different conceptual scopes.

1. Aggregate and institutional sector measures of income, consumption and wealth

34.21 The headline economic growth measure that is produced from the national accounts, GDP, is often used to represent societal progress or the material well-being of the population. However, GDP is one of a number of aggregate and institutional sector measures of economic performance that are contained in the sequence of economic accounts. This section describes a range of relevant measures and related issues.

34.22 GDP is a measure of the value added through production by resident economic units. While this focus encompasses a number of elements of income, in particular the returns to capital and labour used in the production process, it does not incorporate other items commonly considered in the discussion of income such as interest, dividends, taxes, social insurance contributions and benefits, and social transfers in kind. The sequence of economic accounts has entries for all of these items and hence, depending on the income concept that is preferred, different measures of income can be derived.

34.23 The sequence of economic accounts is described fully in chapter 3 on Overview of the integrated framework. In summary, the sequence represents a series of accounts each concerned with recording different parts of the economic activity involving all economic units. Each account is structured such that a balancing item is derived. By way of example, the first account in the sequence, the production account, records entries for output and intermediate consumption and the balancing item or position derived from this account is value added (i.e., output less intermediate consumption). The balancing item from one account serves as a starting point for the next account in the sequence. Table 34.1 provides a selection of aggregate and institutional sector entries and balancing items from the sequence of economic accounts with balancing items highlighted in bold italics.

34.24 For the purposes of assessing material well-being a number of different entries and balancing items are relevant. In relation to measuring income, the recommended balancing items and associated entries are earned income and disposable income adjusted for social transfers in kind. In relation to consumption, the recommended entries are final consumption expenditure and actual final consumption. In relation to wealth and changes in wealth, the relevant balancing items are net lending, net worth and net financial worth. The connection between income and wealth is reflected in measures of net saving.

34.25 Definitions of these entries and balancing items are provided in chapter 3 and discussed in detail in chapters 7 – 14 on the sequence of economic accounts. Importantly, all of these measures are also established for individual institutional sectors, including corporations, general government and households. The range of different measures points to the relevance of compiling a full sequence of economic accounts and hence support a wide range of analysis across income, consumption and wealth, including the derivation of multivariate indicators.

Table 34.1: Selected aggregate and institutional sector measures from the sequence of economic accounts

	Institutional sectors					
	Non-financial corporations	**Financial corporations**	**General government**	**Households**	**NPISH**	**Total economy**
Production account						
Output						
Intermediate consumption						
Value added / GDP						
Distribution of income accounts						
Remuneration of employees						
Operating surplus / Mixed income						
Property income						
Earned income						
Current transfers other than STIK						
Social transfers in kind (STIK)						
Disposable income						
Disposable income adjusted for STIK						
Final consumption expenditure						
Actual final consumption						
Saving						
Capital account						
Capital transfers						
Gross capital formation						
Depreciation						
Depletion						
Net lending						
Financial account						
Net acquisition of financial assets						
Net acquisition of liabilities						
Net lending						
Balance sheet						
Produced non-financial assets (excl. natural resources)						
Non-produced non-financial assets (excl natural resources)						
Natural resources						
Financial assets						
Liabilities						
Net financial worth						
Net worth						

34.26 For many balancing items the preferred measurement is in net terms, i.e. after deducting depreciation and depletion of non-financial assets used in production. Measurement in net terms provides the most appropriate measures of income and wealth for the purposes of assessing material well-being since they take into consideration the decline in the value of capital over an accounting period that will influence the capacity of

an economy to generate income and sustain material well-being into the future. A longer discussion on the use of gross and net measures is presented in chapter 19 on Summarizing, integrating and balancing the accounts.

34.27 At a national level, it is particularly evident that flows to and from the rest of the world need to be considered when measuring income and wealth. In measuring GDP, the connection to the rest of the world is reflected in the inclusion of exports and the deduction of imports. However, there are other flows that should be adjusted for to find an appropriate measure of national disposable income. This will include flows of remuneration of employees, flows of property income (interest and similar returns, dividends and other property income), flows of current transfers and other transfers vis-à-vis the rest of the world.

34.28 For the measurement of trends in material well-being over time and for comparisons across countries a number of adjustments to aggregate economic measures are appropriate. First, to compare material well-being over time, the effects of price changes must be removed. Thus, the focus is on volume measures of GDP and real measures of national income (See chapter 18 on Measuring prices, volumes and productivity for a further elaboration.). Second, it is usual to express these measures in terms of the size of the population to which they relate, i.e., per capita. This can be particularly relevant in making comparisons across countries. International comparisons of material well-being will also be aided by making adjustments for (i) differences in purchasing power through the calculation and application of purchasing power parities (PPPs) (see chapter 18); (ii) differences in hours worked (see chapter 16 on Labour); and (iii) the impact of changes in the terms of trade (i.e., the difference between changes in export and import prices) (see chapter 18).

34.29 Bringing all of these considerations together enables a number of different measures to be derived reflecting the various adjustments described in the previous paragraph. Examples of the range of measures start from GDP and GDP per capita and include net domestic product, net national income, real net national income, and real net national disposable income per capita. Each of these measures will provide insights into a country's level of material well-being and changes over time, primarily in terms of the total income available to support final consumption and future investment. Section C considers the distribution of income and wealth across population groups within a country.

34.30 Many of the aggregate measures of income and wealth described here are also compiled for institutional sectors within the sequence of economic accounts, including for non-financial and financial corporations, general government, non-profit institutions serving households (NPISHs) and households. These different aggregate and sectoral measures and the relationships between them are described in chapter 3 on Overview of the integrated framework. Importantly, all of these calculations can be undertaken within the context of the sequence of economic accounts described in the SNA and the associated methods for making the adjustments.

34.31 Generally, the sequence of economic accounts is compiled only at the national level. In many countries there will also be interest in understanding variation within a country, for example across states, provinces or regions. For this purpose, regional (sub-national) accounts can be compiled, noting that generally these accounts will focus on measures of output and value added rather than providing a full sequence of accounts at regional scale, although more countries have started to compile regional estimates for households covering a broader range of accounts and indicators. The compilation of regional accounts is described in chapter 20 on Elaborating the accounts. For the purposes of assessing material well-being at the regional level, it is desirable to measure per capita household income and consumption since measures of regional gross value added on a per capita basis will be affected by variations in economic structure, prices and environmental context.

2. Alternative measures of income and wealth

34.32 To this point, the discussion of measures of income, consumption and wealth has been based on the application of the concepts, definitions and measurement boundaries applied in the integrated framework of the SNA. For some purposes, other measurement boundaries and definitions may be applied, often involving adjustments to the integrated framework's definition and scope rather than being unconnected. For example, an alternative income concept could be used that comes closer to what an individual household would normally consider as "income", such as the income concept developed by the *Canberra Group (UNECE,*

2011). This income concept states that "household income consists of all receipts whether monetary or in kind (goods and services) that are received by the household or individual members of the household at annual or more frequent intervals but excludes windfall gains and other such irregular and typically one-time receipts". From an SNA perspective, this alternative income concept is equal to adjusted disposable income as defined in the integrated framework of the SNA minus non-life insurance benefits and winnings from lotteries. Further, the Canberra Group definition excludes specific national accounts related items such as imputed social contributions, investment income disbursements from insurance and pensions, and the adjustment for implicit financial services on loans and deposits.

34.33 A broader income concept defines income as the maximum amount that can be consumed in a given period while keeping real wealth unchanged. This means that, in addition to income as defined in the SNA sequence of economic accounts, the measure of income is adjusted for holding gains and losses related to the holding of non-financial and financial assets and liabilities. This measure can be derived using data from the accumulation accounts by incorporating revaluations. However, for this purpose a distinction between realized and unrealized holding gains may be necessary.

34.34 A broader wealth concept for households could also be measured to include social security pension entitlements as discussed in chapter 24 on Insurance and pensions. These entitlements are not included within the asset boundary as defined in the SNA sequence of economic accounts (see paragraphs 4.102 and 24.193 to 24.196), but constitute an important resource for households when going into retirement. Data on these entitlements is captured in a supplementary table on social insurance pensions (see table 24.10). While the government may have the ability to change the entitlements, by including these projected entitlements in household income analysis additional insights are provided about the resources that households expect to have available for their retirement, which may influence their current consumption decisions. The data can also support analysis of the impacts resulting from policy changes in relation to the aging society and explicitly accounting for the accrual of these entitlements will provide insights into the impact of re-distributional policies of government.

34.35 Using these alternative measures of income and wealth is relevant in assessing material well-being since standard SNA measurements are designed to ensure aligned treatments across all sectors and may not best reflect the perspectives of individual sectors or groups, particularly in relation to the behaviours and expectations of households.

C. Accounting for the distribution of income, consumption and wealth across households

34.36 Aggregate economic measures are most useful for comparisons across countries but for the assessment of material well-being within a country a more targeted approach should be applied. In the first instance, it is appropriate to focus directly on measures of income, consumption and wealth for the household sector as a whole and then to consider the distribution of income, consumption and wealth across different households.

34.37 Accounting for the distribution of household income, consumption and wealth supports the presentation of coherent and consistent data on these various entry points to the measurement of material well-being. The accounting process facilitates the organization of data that are (i) coherent with macroeconomic aggregates, (ii) consistent across accounts within the household sector; (iii) comparable over time and across countries; and (iv) consistent with the accounts of the other sectors due to adherence to quadruple entry accounting principles. To these ends, it requires that the compilation of distributional accounts takes into consideration the joint relationships between income, consumption and wealth. This in turn supports the computation of multivariate indicators (such as consumption-to-income, debt-to-income or wealth-to-income ratios) for the various breakdowns of the household sector.

34.38 The discussion of the distribution of income, consumption and wealth has been of increasing interest in many policy areas and there is substantive measurement experience and guidance available to support work in this area. This section summarizes key aspects of the definition and scope of households in the SNA sequence of economic accounts and lists the different groupings of households that will be relevant in distributional measurement and analysis. The section then summarizes key points in measuring the distribution of household income, consumption and wealth.

34.39 Although distributional accounts use households as the unit of analysis, and while individuals are not distinct institutional units in the SNA sequence of economic accounts, for a number of topics in the measurement of material well-being, the collection and organization of data by type of individual is appropriate and necessary. For example, the measurement of labour input and human capital is associated with the skills, experience and earnings of individuals; the measurement of time use is undertaken by recording the activities of individuals, and in the assessment of health and education it is individuals who benefit in the first instance. Since the total number of individuals in the resident population must align with the total number of individuals within households, in aggregate there is no conceptual difference in scope whether individuals or households as the unit of analysis. The choice of unit of analysis should therefore be made on the basis of relevance and data availability.

34.40 A more detailed elaboration of households and household distributions is presented in chapter 32 on Households. Chapter 32 provides an introduction to a number of measurement considerations including the potential, via a national accounting framework, to integrate and reconcile data about household income, consumption and wealth from both macro and micro based data sources. Generally speaking, measures of household distributions will require micro data as a fundamental input, for example from household surveys or administrative data sources (e.g., taxation statistics). However, there are often differences in measurement approach at the micro level that require adjustment to allow integration with macro data from the national accounts. A detailed explanation of compilation and reconciliation issues is described in the *OECD Handbook on the compilation of household distributional results on income, consumption and saving in line with national accounts totals*.

1. The scope of households

34.41 For consistent measurement and analysis, it is necessary to define the set of households within the scope of measurement for distributional accounting and analysis. The definition, measurement scope and associated considerations concerning households is articulated in chapter 5 on Institutional units and sectors, economic territory and residence and chapter 32 and the same definition and treatments are applied in this chapter. The key aspects are summarized below.

34.42 Chapter 5 recognizes two main types of units that may qualify as institutional units, namely persons or groups of persons in the form of households, and legal or social entities. In the integrated framework of the SNA, ***a household is single person or a group of persons who share the same living accommodation, who pool some, or all, of their income and wealth and who consume certain types of goods and services collectively, mainly housing and food.***

34.43 In distributional accounts, the individual members of multi-person households are not treated as separate institutional units, i.e., the unit of analysis is a household. This treatment recognizes that many assets are owned, or liabilities incurred, jointly by two or more members of the same household, while some or all of the income received by individual members of the same household may be pooled for the benefit of all members. Moreover, many expenditure decisions, especially those relating to the consumption of housing and food, may be made collectively for the household as a whole. For these reasons, the household as a whole rather than the individual persons in it are treated as the institutional unit.

34.44 A household unit may coincide with the concept of a family, but members of the same household do not necessarily have to belong to the same family as long as there is some sharing of resources and consumption. Households may be of any size and take a wide variety of different forms in different societies or cultures depending on tradition, religion, education, climate, geography, history and other socio-economic factors. The definition of a household that is adopted by survey statisticians familiar with the socio-economic conditions within a given country is likely to approximate closely to the concept of a household as defined in the integrated framework of the SNA, although survey statisticians may add more precise, or operational, criteria within a particular country.

34.45 The definition of families can vary in different societies and cultures but it may be a useful unit of analysis in some contexts. In many instances, families will encompass multiple household units as defined in the integrated framework of the SNA. Thus, it may be the case that in the collection and analysis of time-use survey data, the scope of unpaid household service work encompasses services provided to people considered

family members but who are outside the household unit defined by the integrated framework of the SNA. This is discussed further in section D.3.

34.46 As described in chapter 5, the residence of individual persons is determined by the location (principal residence) of the household of which they form part and not by their place of work. All members of the same household have the same residence as the household itself, even though they may cross borders to work or otherwise spend periods of time abroad. If they work and reside abroad for sufficient time such that they acquire a centre of economic interest abroad, they cease to be members of their original households.

34.47 As well as private households, there are units described as institutional households that comprise groups of persons residing in hospitals, retirement homes, convents, prisons, etc. for long periods of time, usually interpreted as one year. These people are treated as belonging to a single institutional household when they have little or no autonomy of action or decision in economic matters. On the other hand, people who enter hospitals, clinics, convalescent homes, religious retreats, or similar institutions for short periods, who attend residential schools, colleges or universities, or who serve short prison sentences should be treated as members of the private households to which they normally belong.

34.48 Conceptually, the measurement of material well-being of households for a country should encompass all resident households including institutional households. In practice, the collection of data on institutional households may be difficult but estimates can be made using household survey data, census data, administrative data, counter-party data or other methods to ensure as complete a picture as possible is developed of the household sector.

34.49 While the household constitutes the unit of analysis, households may differ in size and composition, and as a consequence they will have different consumption needs. Thus, for some aspects in the measurement of material well-being, such as in the analysis of data on income and consumption at the household level, it is recommended to focus on "equivalized" results, using equivalence scales that take into account differences in size and composition of households, to arrive at comparable results across households, recalculating results according to the number of consumption units in each household. The use of equivalence scales for wealth is also relevant but since wealth may not benefit all current household members (i.e., it may provide benefits in the future), there is less consensus on which equivalence scales are appropriate and different types of scales may be needed compared to those used for income and consumption. Further discussion of household equivalence scales is presented in chapter 32 on Households.

34.50 More generally, there are many different types of households such that a focus on the material well-being of all households "on average" presents a more limited description of current and past trends in material well-being than data presented according to different typologies of households. A range of typologies may be used depending on the analytical question and the availability of data. The main criteria for grouping households are:

- Current income or wealth groups, for example, quintiles, deciles, percentiles or more granular groups (e.g., top 0.1% of income) on the basis of equivalized disposable income or net worth.
- Regular income taking into account stage of life effects and business cycle effects, into groups such as quintiles, deciles, etc.
- Main source (i.e., highest share) of income; e.g., according to wages and salaries, gross mixed income from household unincorporated enterprises, net property income receivable and net current transfers receivable (potentially further separating pension benefits receivable).
- Number and age of members of the household. For example, the following eight household compositions could be used: single less than 65 years old; single 65 years and older; single with children living at home; two adults less than 65 years old without children living at home; two adults at least one 65 years or older without children living at home; two adults with less than 3 children living at home; two adults with at least 3 children living at home; and other.
- Characteristics of a reference person within the household (e.g. according to age, sex, labour market status, educational attainment, disability status). In this respect, it should be noted that the use of a reference person approach to household groupings is to be undertaken with care, as the set of reference persons may not be representative of the wider population; see paragraph 34.51.

- Geographic region and degree of urbanization (e.g., rural, remote, urban).
- Housing status (e.g., rental, owner-occupied).

34.51 In presenting data according to these household types, it is relevant to record complementary information on the relevant socio-demographic characteristics of all individuals within the households (e.g., their age, sex, income, employment status, educational attainment). This information supports a richer understanding of the household sector given that households are generally composed of a variety of individuals with different characteristics. As a specific example, grouping households based on the characteristics of a reference person may lead to results that are not always representative of the full population since the measurement reflects only the socio-demographic characteristics of the reference person. Thus, when considering analysis by sex, the distributions will not reflect differences between men and women in general, but rather will reflect differences between households where a man is the reference person and those where a woman is the reference person. Here, it is noted that "sex" is recognized as a core demographic variable about which data are regularly collected in censuses and household surveys. This variable may also be referred to as "gender" and sometimes these terms are used interchangeably. In data collection, some countries allow for respondents to provide a more nuanced expression of their identity beyond traditional binary response options. For more information, see *https://data.unwomen.org/resources*.

2. Compiling accounts for the distribution of household income, consumption and wealth

34.52 The compilation of accounts showing the distribution of household income, consumption and wealth entails breaking down results for various accounts of the household sector as defined within the SNA sequence of economic accounts, into more granular subsectors consisting of specific groups of households. Ideally, this should be done for the whole sequence of interconnected household sector accounts representing different types of economic activity occurring within a period of time, including balance sheets that record stocks of assets and liabilities held by the household sector at the start and end of that period. Table 34.2 provides selected measures from the sequence of economic accounts for private households within the household sector distributed using income deciles to define the groups of households as recommended in chapter 5. This focus for measurement leads to a consistent and comprehensive description of different groups of households across the various accounts. Data for institutional households could be used to extend the table and provide a complete coverage of the household sector.

34.53 There is a range of challenges in the compilation of distributional accounts. These include the measurement of inter-household flows and stocks, including inter-generational transfers; determining the equivalence of households, including over time; the allocation to individual households of items for which household level (micro) data are lacking (e.g., measures of the non-observed economy, disbursements of investment income and implicit financial services on loans and deposits); the challenge of linking data across different data sources using statistical matching techniques; breaking down changes in wealth into underlying flows; and compiling price indices for different household groups. These and other measurement challenges are discussed further in chapter 32 on Households.

34.54 The material well-being of different household groups will also be affected by different levels of ownership of consumer durables. For the purpose of compiling distributional results, it is recommended that countries show separate estimates of expenditure on consumer durables and associated measures of depreciation as supplementary items. This is particularly relevant in supporting the analysis of household saving. Furthermore, estimates of the value of the stock of consumer durables will be relevant in the analysis of household wealth. The treatment of consumer durables is discussed in chapter 10 on Use of income accounts.

34.55 The focus of household distributions in this section has been on entries concerning income, consumption and wealth within the scope of the sequence of economic accounts. However, distributional analysis should not be confined to these entries and analysis of many of the topics discussed in the following sections, including unpaid household service work, health care, and education and training, will be substantially enhanced through the provision of household distributions for relevant variables.

Table 34.2: Selected measures for private households from the sequence of economic accounts by income decile

	Household type (income decile)										
	1st	**2nd**	**3rd**	**4th**	**5th**	**6th**	**7th**	**8th**	**9th**	**10th**	**Total private households**
Production account											
Output											
Intermediate consumption											
Value added / GDP											
Distribution of income accounts											
Remuneration of employees											
Operating surplus / Mixed income											
Property income											
Earned income											
Current transfers other than STIK											
Social transfers in kind (STIK)											
Disposable income											
Disposable income adjusted for STIK											
Final consumption expenditure											
Actual final consumption											
Saving											
Capital account											
Capital transfers											
Gross capital formation											
Depreciation											
Depletion											
Net lending											
Financial account											
Net acquisition of financial assets											
Net acquisition of liabilities											
Net lending											
Balance sheet											
Produced non-financial assets (excl. natural resources)											
Non-produced non-financial assets (excl natural resources)											
Natural resources											
Financial assets											
Liabilities											
Net financial worth											
Net worth											

34.56 In addition, measures of the distribution of household income and consumption as described above may be extended to incorporate data on income and consumption beyond the production boundary applied in the integrated framework of the SNA, in particular concerning unpaid household service work. It is likely that flows of unpaid work will vary considerably across household types and thus change the relative distributions

of income and consumption, for example across income deciles.

D. Measures of household final consumption and production

34.57 This section describes how the measurement of the material well-being of households can be supported by measuring household final consumption and production, including through the extension of measures of final consumption and production beyond the production boundary applied in the integrated framework of national accounts. The section commences with a discussion on household final consumption since this is a common entry point to the discussion of household material well-being is commonly considered in terms of the set of goods, services and other benefits enjoyed by people.

34.58 The discussion of household final consumption here recognizes that a focus only on those goods and services within the scope of the production boundary applied in the integrated framework of national accounts is not sufficient for the assessment of material well-being. It is also noted that there will be a range of complementary indicators, for example, concerning population and housing density, housing and rental costs, and access to transport facilities, that will be relevant in this context. While some of the data to underpin the derivation of such indicators can be derived from accounting based data sets, this section does not document the indicators that might be selected for assessment of material well-being.

34.59 From a household production perspective, the measurement of material well-being requires bringing into view a broader range of activities that people undertake including unpaid household service work. To provide a statistical basis for the measurement of these activities, the section uses the forms of work framework, as defined in the *ICLS Resolutions*. By placing these forms of work in context, a significant range of information can be organized including both labour input within the production boundary applied in the integrated framework of national accounts and contributions of households beyond this production boundary, for example in volunteering, and most broadly to the wider measurement of time-use. Connections can then be made to data concerning unemployment and working conditions, thus supporting the integrated assessment of economic and social issues.

34.60 Note that in the integrated framework of the SNA there is no equivalence between total household final consumption and total contribution of households to production. Thus, measures of household final consumption will include goods and services that are produced by other economic units including goods and services imported from the rest of the world. As well, the contribution of households to production will extend beyond the operation of their own households and include labour inputs to the production of goods and services used by other economic units.

1. Sources of household final consumption

34.61 Within the integrated framework of national accounts, household expenditures on goods and services include consumption of food, clothing, energy, water, housing, transport, recreation, education and health. Expenditure on these items is included in the measure of household final consumption expenditure. Measured in current prices and in volume terms, data about the level of and changes in household final consumption expenditure, either as a total or per capita, is of considerable relevance in the assessment of material well-being and in particular for comparisons across countries. The relevant considerations for the measurement of expenditure by type of good and service – classified using *COICOP* – are detailed in chapter 10 on Use of income accounts.

34.62 The measurement of household final consumption expenditure explicitly includes goods produced by households that are subsequently consumed by those same households, i.e., household output for own final use; see paragraphs 7.124 to 7.129. In the context of assessing material well-being within and across countries, the level of this consumption is of significant policy interest, in particular concerning subsistence production and consumption of food, water and fuel. Subsistence producers, which may include indigenous and First Nations peoples, constitute an important group in relation to production of goods for own final use. Subsistence producers are defined as all those who produce and/or process for storage agricultural, fishing, hunting and gathering products that contribute to the livelihood of the household or family.

34.63 Another specific area of policy interest is the production of energy by households, particularly as it concerns the wider response to the challenges of mitigating the effects of climate change, but also in the context of volatility in the cost of energy. Depending on the economic context, the production of this energy for own final use extends from the collection of firewood or other biological resources for combustion, to the installation of infrastructure to capture energy from renewable sources, for example, solar panels and wind turbines.

34.64 The sequence of economic accounts complements the measures of household final consumption expenditure with measures of household actual final consumption. Measures of actual final consumption are of particular relevance in international comparisons since they allow for variations in the extent to which household consumption is paid for by general government and NPISHs via their provision of non-market goods and services to households and their procurement of market goods and services on behalf of households. Important examples include government expenditure on health and education. In the sequence of economic accounts, there are corresponding entries for social transfers in kind to ensure that the relevant transactions balance appropriately. Chapter 10 explains these issues in detail.

34.65 The analysis of material well-being is also supported by the organization of data on the collective consumption of government which, on the whole, corresponds more or less to the supply of public goods. For example, data on levels of government expenditure on health care infrastructure, education and training facilities, public infrastructure for transport, national parks and sporting facilities provide important insights into the level of material well-being of a community. The assessment of the trends in gross fixed capital formation in these areas is relevant.

34.66 For all components of household consumption, measures of the relative shares of expenditure on different goods and services, for example, the share spent on food or energy, are of high interest, particularly in situations where relative price movements for different products are diverging. Consequently, measurement of consumption expenditure in volume terms is also important for analysis. Relevant measurement advice concerning prices and volumes is described in chapter 18 on Measuring prices, volumes and productivity.

34.67 The preceding discussion focused on consumption within the sequence of economic accounts. There are a number of types of household consumption outside this scope that are relevant in assessing material well-being. First, it is noted that the sequence of economic accounts treats household purchases of consumer durables such as cars and washing machines, as consumption expenditure. As recognized in chapter 10, since this expenditure concerns items which provide services to households over an extended period of time, it is recommended that the expenditure be separately identified and recorded as supplementary items. Therefore, analysis of expenditure on consumer durables relative to total household consumption expenditure may provide important insights to material well-being, especially for different household types.

34.68 To support measurement of material well-being, the measurement of household consumption can be extended to include benefits obtained by households from production that is outside the production boundary applied in the integrated framework of the SNA but within the general production boundary described in chapter 7 on Production account. Of high importance are the benefits arising from unpaid household service work. The measurement of this activity is described in detailed in section D.3.

34.69 Outside the general production boundary but of significance for assessing well-being are "non-productive" activities undertaken by individuals. These activities include basic human activities such as eating, drinking, sleeping, leisure, exercising, etc. They are considered non-productive since it is not possible for one person to employ another person to perform the activity for them. Commonly, this is referred to as the "third party criterion". While these activities may be non-productive in an economic sense, the benefits they generate clearly contribute to well-being and in particular to health outcomes. From an accounting perspective there is no monetary value that is placed on the benefits arising from these activities. However, the organization of data on the time spent undertaking these activities, particularly sleeping, leisure and exercising, may be of particular interest. A complete accounting of time-use, as discussed in section C.4, is the appropriate approach for organizing the relevant information.

34.70 Also outside of the general production boundary, households benefit from a wide range of ecosystem services. Following the *SEEA Ecosystem Accounting*, "ecosystem services are the contributions of ecosystems to the benefits that are used in economic and other human activity". Examples of ecosystem services of benefit to households include provisioning services from agricultural and forest land that are

embodied in crops, livestock and timber products that are ultimately consumed by households; cultural services from, for example, national parks and rivers, that provide recreational opportunities and amenity values; and regulating and maintenance services such as air filtration, water regulation and purification, flood mitigation, soil erosion control, noise attenuation and global climate regulation that contribute to a range of benefits including health.

34.71 Flows of provisioning and cultural services are more readily observed in connection with the day-to-day activity of households and commonly the monetary value of these services is embodied in the values of goods and services ultimately purchased by households such as food, clothing and recreation services. For regulating services, the situation is different and most of these services reflect ongoing natural processes and ecological functions that households are largely unaware of. Indeed, in many cases they reflect a form of collective consumption following the definition in the integrated framework of the SNA. Data about the flows of ecosystem services, including recording which population groups use and benefit from these services, will be relevant in both understanding the full breadth of household consumption and in understanding the sustainability of that consumption in relation to the extent and condition of the underlying natural capital. This latter topic is discussed further in chapter 35 on Measuring the sustainability of well-being.

34.72 Beyond the ecosystem services recorded in the *SEEA Ecosystem Accounting*, the environment provides benefits related to the more general appreciation that people hold for ecosystems and species. In environmental economics, methods have been developed to value these benefits in monetary terms, for example, using choice experiments and contingent valuations, but these valuations are considered inconsistent with the concept of exchange values applied in the SNA and *SEEA*. As part of its description of applications and extensions of ecosystem accounting, chapter 12 of the *SEEA Ecosystem Accounting* outlines ways in which data about these values may be placed in context with accounting-based data to provide wider measures of consumption and material well-being.

34.73 Table 34.3 provides a structure for recording selected data on household consumption by type of household differentiating consumption by source of consumption.

Table 34.3: Selected data on household consumption by type of household by source of consumption

	Household type (income decile)										
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total private households
Household final consumption expenditure											
by COICOP											
Social transfers in kind											
Household actual final consumption											
Unpaid household service work											
by type of service											
Ecosystem services											

34.74 In addition to data in monetary terms, a range of non-monetary data can be used to support analysis of material well-being, recognizing that these data cannot fully inform the assessment of the trade-offs in consumption made by households over time. As an example of non-monetary data, data on the number and types of households that undertake production of goods for own final use may provide important insights into the distribution of income and consumption, an example being data on time spent collecting water and firewood. Also, in addition to the derivation of price and volume indexes for all goods and services, complementary tables presenting non-monetary data can be compiled for selected goods and services following an accounting based approach, such as reflected in the physical flow accounts of the *SEEA Central Framework*. For

example, estimates of consumption for various food products in terms of weight or nutritional content can be derived. The UN Food and Agriculture Organization (FAO) food balance sheets provide an indication of what is possible in this direction. Similarly, estimates of energy consumption in joules and transport activity in kilometres can support richer analysis of household expenditure data. A more complete mapping of physical flows for selected products can directly support analysis of solid waste, recycling and reuse as part of understanding the circular economy.

2. Forms of work

34.75 A focus on household consumption and the range of benefits that people enjoy is a relevant entry point to the measurement of material well-being. A complementary focus on the activities that people undertake, both economic and non-economic, also provides important information on people's material well-being. This section discusses the various forms of work that individuals engage in, while section D.4 introduces approaches to accounting for all uses of time, including leisure.

34.76 The appropriate standard for recording data on people's economic activities, defined as those activities within the general production boundary, is the international statistical standard definition of employment from the *19th ICLS Resolution concerning statistics of work, employment and labour underutilization* adopted in 2013. This Resolution provides the standard definition of the concept of work and describes the forms of work framework in which employment work is the key reference concept. The Resolution establishes that the concept of work "comprises any activity performed by persons of any sex and age to produce goods or to provide services for use by others or for own use."

34.77 The Resolution identifies five forms of work which are distinguished by the intended destination of the production (for own final use; or for use by other economic units) and the nature of the transaction (i.e., monetary or non-monetary transactions, and transfers):

a. "own-use production" work comprising production of goods and services for own final use;

b. "employment work" comprising work performed for others in exchange for pay or profit;

c. "unpaid trainee work" comprising work performed for others without pay to acquire workplace experience or skills;

d. "volunteer work" comprising non-compulsory work performed for others without pay; and

e. "other work activities", which include such activities as unpaid community service and unpaid work by prisoners, when ordered by a court or similar authority, and unpaid military or alternative civilian service, which may be treated as a distinct form of work for measurement (such as compulsory work performed without pay for others).

34.78 From the perspective of the activities within the production boundary applied in the integrated framework of national accounts, the most important form of work is employment with the most significant portion of this component relating to the contribution of employees and self-employed persons. From the perspective of household material well-being, employment related data are of high relevance including measures of remuneration of employees, number of employees and self-employed, and hours worked. Such data can be used to derive indicators such as mean and median earnings. These employment related data also underpin accounting for human capital as described in section E and chapter 35 on Measuring the sustainability of well-being. The organization of these data in an accounting context is described in chapter 16 on Labour. In addition, organizing these data by type of household following the groupings listed in section C.1 and in terms of characteristics of individuals such as age and sex is relevant. Of particular note is the measurement of the distribution of income for which the distribution of remuneration of employees will be a core element (see chapter 32 on Households).

34.79 Chapter 16 on Labour provides a richer description of the relationships between these five forms of work, the production boundary applied in the integrated framework of national accounts and the general production boundary. The core message is that while employment as a form of work is important, there is also a range of other ways in which people contribute to activities within the general production boundary. Measurement of these non-employment contributions provides important insights into household material well-being.

34.80 In terms of non-employment contributions, of most significance in the measurement of material well-being is the activity associated with unpaid household service work. In the forms of work framing, unpaid household service work includes both services produced for own final use and services produced for other economic units through volunteer work. The measurement of unpaid household service work is discussed in detail in the following section.

34.81 A related perspective on the forms of work listed above concerns the distinction between the formal and informal economy. As defined in chapter 39 on Informal economy, the informal economy refers to the productive activities carried out by persons or economic units that are not covered by formal arrangements established by regulations and laws and includes all informal productive activities carried within the general production boundary. In the same vein, the measurement of the non-observed and illegal economy is relevant in assessing household material well-being in many countries. Chapter 39 provides a description of accounting approaches to the measurement of the informal economy. The measurement considerations outlined in chapter 39 can be linked to the discussion in this chapter on material well-being recognizing that the key connecting concepts are the production boundary applied in the integrated framework of national accounts and the general production boundary.

34.82 Table 34.4 provides a summary structure for recording information on the activity of individuals across the different forms of work.

Table 34.4: Forms of work by individual characteristics

		Forms of work							
		Own-use production work		Employment work	Unpaid trainee work	Volunteer work	Other work	**Total**	**of which: Unpaid household service work**
			of which: Unpaid household service work						Own-use production work + Volunteer work
		Number of people / Hours							
Total									
By individual characteristic									
	Age								
	Sex								
	Educational attainment								

3. Unpaid household service work

34.83 Chapter 7 on Production account recognizes that there are many activities undertaken by households that satisfy the general production boundary involving the use of labour and capital for the production of goods and services. However, the production boundary applied in the integrated framework of the SNA only includes those household activities that produce goods as well as the activities related to the production for own final use of housing services by owner-occupiers and the production of domestic and personal services by employing paid domestic staff. Paragraphs 7.24 to 7.46 provide a full explanation of this treatment. The exclusion of unpaid household service work from the production boundary of the integrated framework is seen as a significant limitation in using GDP as a measure of material well-being, since it omits a significant volume of production and consumption undertaken by households that relates directly to the health, education and general well-being of people. Given this limitation, accounting for unpaid household service work provides important insights into material well-being and a range of data can be organized following accounting principles to support extended analysis.

34.84 In making the connection to material well-being, unpaid household service work is thought of as an input that, together with market goods and services, is transformed into household goods and services (e.g., caring,

cooking, cleaning and maintenance) that are consumed by household members and benefit individual material well-being. This process operates through intermediate stages involving intra-household production, cooperation and distribution activities. The relationship between inputs (purchased goods and services and unpaid work) and material well-being is not direct and immediate, and the household plays an important role within this process. The progression from the initial stage (market goods and services) to the final stage of this process (individual material well-being) creates added value in society, so that individual and social well-being is greater than the value of the available goods purchased on the market.

34.85 To completely reflect the activity of unpaid household service work within the economic accounts and tables, there are a number of implications for current entries in addition to recording additional output by households. Of particular note is that by extending the production boundary to include this activity, a range of expenditures treated as household final consumption expenditure, for example food, would become intermediate consumption as inputs to the unpaid household service work. Also, expenditure on consumer durables, such as refrigerators, that are also treated as household final consumption expenditure, would become gross fixed capital formation as produced assets providing capital services as inputs to the unpaid household service work. A description of the range of adjustments that would be required to the current economic accounts and tables is provided in the *UNECE Guide on valuing unpaid household service work*.

34.86 While methods can be applied to estimate the monetary value of unpaid household service work, analysis restricted to monetary values is unlikely to completely capture all the contributions to well-being of unpaid work at the individual, household and social level. In particular, unpaid household service work activities, just as with paid forms of work, not only affect significantly and contribute directly to the determination of personal capabilities and well-being outcomes, such as education and health, but unpaid household service work activities such as volunteering can also enhance people's opportunities to participate in social life. For that reason, adopting a time-based accounting approach (see section D.4) is recognized as a better "catch all" solution to measuring the household experience.

34.87 The *UNECE Guide on valuing unpaid household service work* defines unpaid household service work as "those economic services produced in the household and outside the market, but which could be produced by a third person hired on the market without changing their utility to the members of the household". In the forms of work framework described above, unpaid household service work includes both services produced for own final use and services produced for other economic units through volunteer work. The definition excludes activities people can only perform on their own behalf, such as sleeping, other forms of personal care and leisure. These activities lie outside the general production boundary.

34.88 Accounting for unpaid household service work is focused on the measurement of various services. The table below provides a list of key groups of services. For each group there are additional details and specifications concerning the measurement boundaries and relevant treatments that must be considered which are described in relevant guidance material. Importantly, all of these services can have equivalent production activity that is undertaken as part of economic activity recorded in the integrated framework of national accounts. Thus, it is not only the measurement of the volume of services produced at home that is of interest but also changes in the share of these services which is either produced for own final use or purchased from other economic units.

34.89 An important advance supporting the development of this list of services has been the adoption of the *International Classification of Activities for Time-Use Statistics (ICATUS)*. *ICATUS* is consistent with the integrated framework of the SNA to allow the derivation of aggregates for supplementary tables and is comparable with other existing national and regional time-use classifications. It is also aligned with the resolution concerning statistics of work, employment and labour underutilization, adopted by the *19th ICLS.* Although *ICATUS* codes are provided in table 34.5, it should be noted that time-use data may not always be the preferred data source. This is particularly true for infrequent activities such as forms of volunteering, where a longer reference period may be required to capture the activity effectively.

Table 34.5: Types of unpaid household service work

Area	ICATUS codes	Categories, descriptions and considerations
Childcare for own household or family	Division 41 *Childcare and instruction*, including Group 442	Unpaid childcare captures the time provided by care givers caring for children within their own household or family. This can range from helping with homework to feeding, washing or dressing children. Meal production is excluded and would fall under the nutrition category. Unpaid childcare can be distinguished in many ways (such as active vs. supervisory, or physical vs. developmental).
Adult care for own household or family	Divisions *42 Care for dependent adults* and *43 Help to non-dependent adult household and family members,* including Group 443 and Group 444	Unpaid adult care captures activities where individuals are providing healthcare services, assistance with daily tasks, emotional support, or supervisory care to an adult within their own household or family, for example changing bandages or dressings or other medical assistance. Unpaid adult care may be provided on a temporary basis and to those who are potentially terminally ill and need long-term care.
Nutrition for own household or family	Division 31 *Food and meals management and preparation*	Unpaid nutrition services include meal or drink production time, where it may be reasonable to expect that you could choose to order an alternative meal or drink from a market service.
Transport for own household or family	All activities under the following groups covering many purposes and modes of transport except walking (refer to ICATUS for details): Group 182, Group 250, Group 380, Group 441, Group 540, Group 640, Group 750, Group 860, Group 950	Transport associated with any other activity (paid work, leisure, personal care or unpaid work) but where the producer of those services was not paid for that time. Transportation services can include transport provided to others free of charge such as giving another person within the household of family a lift but can also include time where an individual transports themselves as opposed to paying for transport.
Household management services for own household or family	Divisions 32 *Cleaning and maintaining of own dwelling and surroundings*, 33 *Do-it-yourself decoration, maintenance and repair*, 35 *Household management for own final use* and 36 *Pet care*	This includes activities such as cleaning the household, sorting out the household administration or bills, do-it-yourself repairs of the household, pet care and gardening. This category also includes the management of tasks classified under leisure activities, for example the time that a household member has invested in arranging/organizing a tourism trip, but only when the activity meets the third-party criterion (i.e., that another person could have performed the task and obtained the same outcome).
Laundry and clothing services for own household or family	Division 34 *Care and maintenance of textiles and footwear*	Unpaid laundry services involve the cleaning, ironing and drying of clothes, while the category can be extended to also include the unpaid repair of clothing.
Shopping for own household or family	Division 37 *Shopping for own household and family members*	Shopping is an activity that can easily be contracted out, i.e., it meets the third-party criterion. Part of the labour involved in shopping involves the transportation of goods from the shop to the household. Internet shopping means online delivery services are displacing some of the household labour involved in shopping.
Information services for own household or family	This category is likely to be more challenging to capture effectively using the current time-use classification framework	With the expansion of the internet, there is now more scope than before for households to produce information for their own use and for use by other households through digital platforms. These services do not have to be used by the consuming household to then produce another form of unpaid household production but could also be used as part of household leisure activities. The key criterion which defines whether the information produced is of value is whether the

Area	ICATUS codes	Categories, descriptions and considerations
		consumers of the information could have used a paid service for similar information.
Other unpaid household production not elsewhere classified for own household or family	Divisions 39 *Other unpaid domestic services for household and family members,* 49 *Other activities related to unpaid caregiving services for household and family members,* 59 *Other unpaid work activities*	An "other" category is recommended to ensure that a complete accounting of unpaid household service work.
Organisation-based volunteering	Division 52 *Unpaid community- and organization-based volunteering*	When households engage in volunteering through or for a charity of a not-for-profit organisation it is classified as organisation-based volunteering. Organisation-based volunteering may also be further split into different types of unpaid household service work.
Direct volunteering	Division 51 *Unpaid direct volunteering for other households*	Where no organisation is involved, households providing voluntary services to other households are performing direct volunteering. Direct volunteering may also be further split into different types of unpaid household service work.

34.90 Key variables of interest for each of the services listed above include: the time spent on each activity, the monetary value of output and the costs of goods and services used as inputs to production. An important connection in undertaking this accounting work is the ability to compare estimates of these variables with related entries in the integrated framework of national accounts. Thus, for example, measures of time spent on these activities can be compared with measures of labour input and other work on the same activities within the production boundary applied in the integrated framework. To support comparisons, the valuation of unpaid household service work should apply the same valuation methods as the ones used for the integrated framework (see chapter 7 on Production account), that is, in the case exchange values re not available, market-equivalent prices of similar services or, if these are unavailable, the sum of costs method. If applying a sum of costs method, the intermediate costs incurred should be the same as those recorded as part of household final consumption expenditure (e.g., purchases of food, electricity, gasoline).

34.91 In addition to ensuring connection to the recording of activities within the production boundary of the integrated framework, the compilation of estimates on unpaid household service work should also ensure appropriate connection to work on other aspects outside the production boundary for which separate measurement might be undertaken. Examples include the measurement of health care activity, education and training activity (both discussed later in this chapter) and free digital services (discussed in chapter 22 on Digitalization). In these cases, consistent treatment of expenditures, time-use and measurement scope will be of benefit in the compilation of accounts in terms of focusing measurement on common definitions and measurement boundaries and in improving the consistency in the interpretation of data by users.

34.92 The discussion above implicitly focuses on services produced by, and supplied to, members of the same household. However, in some instances it is relevant to measure the provision of unpaid services from one household to another. For example, the service flows between household units that are part of a wider family unit; or the service flows between households associated with direct and organisation-based volunteering. The adjustments required to account for these flows between households will depend on the analytical focus and the scope of the underlying data.

34.93 In the case of organisation-based volunteering, the output is measured at the sum of costs within the production boundary applied in the integrated framework of national accounts. In accordance with the *UN Handbook of national accounting: satellite account on non-profit and related institutions and volunteer work,* volunteer output that exists outside of the production boundary of the integrated framework can be valued using a replacement cost or generalist cost method for the volunteer's labour time. However, to avoid double counting estimates of the value of volunteering organisations contained within the production boundary of the integrated framework, these estimates must exclude the value of any expenses or minor payments they receive in compensation.

34.94 Further, in accordance with the principles applied in the integrated framework of national accounts, if volunteer labour were valued, the following accounting entries would also be necessary:

- remuneration of employees of the unit employing the volunteer labour;
- income for the household to which the volunteer belongs;
- a transfer of the same amount by the volunteer to the employing unit;
- final consumption expenditure of the employing unit;
- in relevant cases social transfers in kind from the producing unit to the households benefiting from the produced services, with a concomitant decrease of final consumption of the producing unit and an increase of final consumption by households .

34.95 For a number of the services there are direct connections to other accounting-based approaches used for specific aspects of material well-being. In the case of accounting for education and training and health care (see sections E and F), the accounts described can be extended to incorporate the output of the same services through unpaid household service work alongside the output produced through activities within the production boundary of the integrated framework. Thus, accounts for education and training can be extended to incorporate the unpaid household service work of childcare and accounts for health care can be extended to incorporate the unpaid household service work of adult care.

34.96 Measures of unpaid household service work can also be used to extend the distributional analysis of income and consumption described in section C. Thus, the measures of unpaid work can be broken down into different household groupings as proposed in that section – for example by income decile. Differences in the extent of unpaid household service work across household types will depend on the capacity of a household to pay for the same services on the market. Note that in an accounting approach, the measures of unpaid household service work will equally affect measures of household income and household final consumption since the supply and use of the services must balance.

34.97 The development of accounts for unpaid household service work has been a long-standing field of national accounting. There are two sources of international guidance of particular importance for the measurement of unpaid household service work, the *UNECE Guide on valuing unpaid household service work*, and the *UN Guide to producing statistics on time-use*. The first is of importance in providing an important step toward a harmonised international platform for measuring unpaid household service work. The second is of importance as it sets out best practices for the production of time-use surveys, which are typically the primary data source for the compilation of accounts for unpaid household service work.

34.98 In broad terms two approaches have been developed for the measurement of unpaid household service work: the input approach and the output approach. The input approach brings together data on time use, wage rates and other inputs, while the output approach uses data on observed transactions and exchange prices for similar services transacted on the market. Details on applying these approaches are provided in the *UNECE Guide on valuing unpaid household service work*.

34.99 In addition to measures in monetary terms, the accounting supports the presentation of non-monetary data about unpaid household service work including time spent. Additional insights into material well-being are likely to be gained by disaggregating data by the socio-demographic characteristics of those people undertaking unpaid household service work, for example in terms of age (e.g., to support recording of the contribution of children to this work) and sex. In particular, it is highlighted that the production of unpaid household service work exhibits a distinctly gendered pattern in most countries due to prevailing social norms, with women undertaking the largest share of most unpaid domestic and care work. This in turn can significantly affect their overall well-being. Consequently, the compilation of accounts for unpaid household service work by sex is recommended.

34.100 To support a general understanding of the potential organisation of data on unpaid household service work, two tables are presented, one in monetary terms and one using time as the unit of measurement. Two basic decisions need to be made in relation to the granularity of the information on unpaid household service work. The first decision concerns the details on the characteristics of the people involved: sex, age category and/or level of education. This decision also depends on the granularity of data on paid labour, a topic discussed in chapter 16 on the compilation of labour market tables. This level of granularity is not reflected in the table

below.

34.101 The second decision relates to the allocation of the unpaid household service work to industries, and the detail of the industrial breakdown. The connection to industries allows investigation of the balance of output between unpaid household service work and that recorded in the integrated framework of national accounts, and changes in that balance over time, for example in response to changes in labour force participation leading to greater demand for child-care services. For this analysis, it is necessary to consider the level of industry detail used in the regular compilation of national accounts. Table 34.6 shows the high-level industry classes that are considered most relevant in relation to unpaid household service work, while similar considerations need to be thought through regarding the breakdown of products. The unpaid household service activities are shown in the first column, covering both services for own (final) use and volunteering where similar activities are being carried out. In the second column the industry classes of most relevance to each activity are listed.

Table 34.6 Connections between unpaid household service work activity and industry classes

Unpaid household service work activities	**Relevant industry classes (ISIC)**
Unpaid household shopping services	Wholesale and retail trade
Unpaid household vehicle maintenance services	Wholesale and retail trade
Unpaid household transport services	Transportation and storage
Unpaid household nutrition services	Accommodation and food service activities
Unpaid household information services	Information service activities
Unpaid household management services	Administrative and support service activities
Unpaid household developmental childcare or adult care	Education
Unpaid household physical childcare or adult care	Human health and social work activities
Unpaid household laundry services	Other service activities
Unpaid household service work not elsewhere classified	Activities of households as employers Undifferentiated goods and services producing activities of households for own (final) use

34.102 In respect of this breakdown, it should be noted that where developmental care cannot be differentiated, all adult and childcare can be aligned to "human health and social work activities". Furthermore, the last category refers to "for own (final) use". However, if there is volunteering that cannot be allocated to a particular type of unpaid household service work, then it may also need to be allocated to this category even though it would technically be better described as "for use by other economic units". If deemed preferable, an alternative might be to create an additional activity category to allocate volunteering activity that is not defined elsewhere.

34.103 Table 34.6 presents an extended use table for unpaid household service work that highlights the key standard products of relevance recorded in the use table as well as additional unpaid services arising from unpaid household service work for own (final) use and arising from organisation-based and direct volunteering. The columns show the activities using unpaid household service work (which is shown as an "of which" item) together with entries for final consumption expenditure and gross fixed capital formation. More detailed proposals and associated extensions are described in compilation guidance on unpaid household service work (*reference to be finalized*), recognizing that for certain entries data may not be available directly and assumptions and modelling may be required.

Pre edit version

Table 34.7 Extended use table for unpaid household service work

	Intermediate consumption by type of activity																						
	Wholesale and retail trade, repair of vehicles		Transportation and storage		Accommodation and food service		Information service activities		Administrative and support service activities		Education		Human health and social work activities		Other service activities		Activities of households as employers		Other intermediate consumption	**Total intermediate consumption**	**Final consumption expenditure**		**Gross fixed capital formation**		
		of which: Unpaid household shopping services		of which: Unpaid household transport services		of which: Unpaid household nutrition services		of which: Unpaid household information services		of which: unpaid household management services		of which: unpaid household developmental childcare and adult care services		of which: unpaid household physical childcare and adult care services		of which: other unpaid household laundry and volunteering services		of which: other household production nec for own household or family				of which: consumer durables used in the production of unpaid household services		of which: consumer durables used in the production of unpaid household services	**TOTAL USE**
Standard products																									
Food, beverage and tobacco products																									
Coke and refined petroleum products																									
Computers, electronic and optical products																									
Electrical equipment																									
Machinery and equipment nec																									
Motor vehicles, trailers and semi-trailers																									
Other transport equipment																									
Furniture; other manufactured goods																									
Electricity, gas, steam and air-conditioning																									
Water supply, sewerage, waste mgt and remediation																									
Own-use and volunteering products																									
Childcare services																									
Adult care services																									
Nutrition services																									
Transport services																									
Household management services																									
Laundry and clothing services																									
Shopping services																									
Information services																									
Unpaid household production nec																									
Total Intermediate consumption																									
Remuneration of employees																									
Other taxes less subsidies on production																									
Depreciation																									
Operating surplus and mixed income																									
Total output																									

4. Other uses of time

34.104 Time-based accounting provides a more complete measure of how people's time is spent. Time based accounting is focused on how households allocate their time, including across the various forms of work, but also in activities outside of the general production boundary. Time based accounting is relevant because technical and organisational innovations shift economic activity, sometimes into, sometimes out of, the market in a variety of ways (e.g., by substituting streaming services for cinema, private cars for public transport or vice versa, domestic washing machines for laundries, on-line flight booking services for travel agents, etc.).

34.105 To aid in measuring unpaid household service work. the UN has developed the *ICATUS*, which provides a classification of all activities on which a person may spend their time over a 24 hour period. It is the standard classification of all economic and non-economic human activities, providing standardised concepts and definitions to support dissemination of internationally comparable time-use statistics.

34.106 A properly designed, nationally representative, time-use survey comprehensively covers all the daily activities of the population. A core feature of time-based accounting is the capability to map the activities of daily life to economic activity defined following the general production boundary. In addition, activities of people beyond the general production boundary, in particular non-productive activities undertaken by individuals, can be recorded. These activities include basic human activities such as eating, drinking, sleeping, leisure, exercising, etc.

34.107 There are some challenging conceptual aspects to reconcile in time-use measurement. For example, it can be difficult to differentiate the effects on well-being of unpaid household service work and leisure. Also, in some occupations at least, paid work has many of the affectively positive characteristics – challenge, sociability, enjoyment – often found in leisure pursuits. Furthermore, it may be difficult in some instances to differentiate the primary use of time where people are, in effect, multi-tasking, for example when working from home and caring for children.

E. Accounting for human capital, education and training activity and health care activity

1. Introduction

34.108 The idea of viewing human knowledge and abilities as an asset – as human capital – and to estimate its value is not new, but has gained prominence in recent years, especially in the context of measuring sustainable development. Policymakers are calling for ways to understand and quantify human capital, in order to better understand what drives economic growth and the functioning of labour markets, to assess the long-term sustainability of a country's development path, and to measure the output and productivity performance of the education sector. Devising a robust methodology for the monetary valuation of the stock of human capital is important since studies, such as the *World Bank Changing Wealth of Nations*, indicate that human capital is a significant component of extended measures of national net worth in many economies.

34.109 As well, there is considerable relevance of measures of human capital from the perspective of understanding the distribution of income and wealth, documenting the effects of changes in the age composition of the population on economic activity, understanding the implication for labour markets in light of ongoing changes in the economy through digitalisation and globalisation, and identifying the non-monetary benefits that may be obtained by society more generally from higher levels of human capital. Finally, in addition to measuring the stock and changes in the stock of human capital, it is also relevant to organise data on investments in human capital, in particular, activity and expenditure on education and training.

34.110 The range of connections and dependencies between human capital, education, labour and output, and other elements including health and unpaid household service work are depicted in the figure below. A key feature of this figure is that human capital is a core concept that underpins a range of aspects of well-being. With this framing in mind, accounting for human capital is described in more detail in chapter 35 on Measuring the sustainability of well-being, alongside the other capitals that underpin the sustainability of well-being. This section describes approaches to account for two important contributors to human capital, education and

training activity and health care activity. The measurement of other aspects in figure 34.2 is discussed in section D above concerning the contributions of unpaid household service work and other forms of work and in chapter 16 concerning labour market tables.

Figure 34.2: Linking education, human capital, employment and production*

* Feedback loops have not been incorporated in this figure.

2. Accounting for education and training activity

34.111 There have been a number of projects undertaken to develop international guidelines on accounting for education and training activity. Examples include the *UNESCO Methodology of National Education Accounts (NEA)*, the *UNESCO-OECD-Eurostat (UOE) Manual for data collection on formal education* and the *OECD publication "Education at a Glance"*. The *NEA* framework and the *UOE* data collection on formal education support compilation of coherent and internationally comparable data. However, they both have elements that differ in several ways from principles and measurement boundaries applied in the integrated framework of national accounts.

34.112 To support compilation consistent with the integrated framework, the *UNECE Satellite account for education and training: compilation guide* can be used. This thematic account uses the national accounts and the relevant data input and classification systems (e.g., education statistics, government finance statistics, *COFOG* and *COICOP* classifications, trade-in-services statistics) as a starting point with the supply and use tables acting as a framework for ensuring consistency. In addition, the thematic account incorporates a detailed classification of education and training activities by purpose based on *International Standard Classification of Education (ISCED)*.

34.113 The scope of the thematic account for education and training activities, as described in the *UNECE Satellite Account for education and training: compilation guide*, covers all public and private expenditure for formal education and vocational training. Thus, the expenditure for education and training activities includes the following items:

- Teaching, administrative and other activities in formal education and vocational training services;
- Non-formal cultural, recreational, sport and vocational education and training activities (also including free courses and e-learning);
- In-house training by employers;

- Associated goods and services directly related to the delivery of education and training services;
- Gross fixed capital formation in the education industry.

34.114 The thematic account includes the expenditures on education and training for all residents of a country, as required for the measurement of the capital formation in human capital. In line with this intention, the accounts encompass expenditures related to domestically produced education and training, as well as imported services (i.e., resident students studying in other countries). Expenditures of non-resident students within a reference country contribute to the human capital of another country and are recognised as exports.

34.115 The thematic account on education and training uses the supply and use framework as the starting point for the organisation of data. Compiling data from both supply and use perspectives allows confrontation of the alternative data sources and improves the quality of the account. Four core tables can be distinguished (*UNECE Satellite account for education and training: compilation guide*):

- Education and training output, by provider and education and training purpose;
- Education and training expenditure, by purchaser and education and training purpose;
- Financing, by sector and education and training purpose;
- Cost structure, by education and training purpose.

34.116 These four tables present monetary data in current prices focusing on the production aspects of the education system. They are intended to reconcile with relevant aggregate entries in the integrated framework of national accounts given that the expenditures incurred by the different economic units within the activity of education and training are part of their costs of production and are linked to their activities as providers of educational goods and services. Depending on country circumstances and data availability, more detailed breakdowns can be compiled. Table 34.8 provides a basic supply and use table showing types of education and training services. Total supply is categorized in terms of different institutional sectors with a key distinction between non-market (general government and NPISH) and market producers. Total use is categorised by users of final consumption and intermediate consumption.

34.117 Where possible, estimates of output, expenditure and costs should be presented in volume terms using appropriate methods and consistent with the advice on price and volume measurement in chapter 18 on Measuring prices, volumes and productivity. While the thematic accounts for education and training largely respect the production boundary of the integrated framework of national accounts for education and training, compilers of these accounts are encouraged to expand the production boundary to include the output from enterprise's internal expenses on in-house training (own account training). The aim of this extension is to provide policy makers with additional data on the expenditures on education and training, and the financing of these expenditures.

34.118 The monetary data presented in the main tables should be supplemented with non-monetary data concerning: population, the number of enrolled students (by *ISCED* level), the number of adults in continuing vocational training and in lifelong learning (broken down by sex and age group), the number of (and hours worked by) teachers/staff (by *ISCED* level) and the number of employed persons in education and training by educational attainment. Combining monetary and non-monetary data sets supports cross-sectional analysis of expenditure per capita or per student which in turn provide important insights for policy measures. Examples of non-monetary tables are presented in section 3.6 of the *UNECE Satellite Account for education and training: compilation guide*.

34.119 A final extension concerns data on the provision of early childhood education which will commonly involve unpaid household service work and hence is outside the production boundary applied in the integrated framework of the SNA. An extension to consider the role of unpaid household service work might also extend to recognise the contribution of other unpaid household service work activities that support the development of human capital such as those relating to childcare, nutrition and information services. Estimates concerning these activities can be incorporated in the *satellite account's* framework recognizing the challenges involved in measuring and valuing unpaid household service work as described in section C of this chapter.

Table 34.8 Basic Education and training expenditures supply and use table

Supply table										
			Government			NPISH	Market producers - Education industry	Other market producers	Imports	Taxes less subsidies on products	**TOTAL SUPPLY**
			Central	State	Local						
Education and training purpose											
	EP0	Pre-primary education									
	EP1	Primary education									
	EP2	Secondary education									
	EP3	Higher education									
	EP4	Cultural, sport & recreation education									
	EP5	Other educational & vocational training									
	EP6	In house training									
		Associated products & admin expenditures									
	TOTAL OUTPUT										
	R&D production of Education industry (ISIC85)										

Use table										
			Final consumption expenditures					Intermediate consumption - market producers	Exports		**TOTAL USE**
			Government			NPISH	Households				
			Central	State	Local						
Education and training purpose											
	EP0	Pre-primary education									
	EP1	Primary education									
	EP2	Secondary education									
	EP3	Higher education									
	EP4	Cultural, sport & recreation education									
	EP5	Other educational & vocational training									
	EP6	In house training									
		Associated products & admin expenditures									
	TOTAL OUTPUT										

3. Accounting for health care activity

34.120 Since health is a fundamental aspect of people's well-being, and can be directly connected to the development and enhancement of human capital (see figure 34.2), it is important to have detailed insights concerning the production and the outputs of the health care systems in countries, the economic units involved, and how health care activity is being financed. While there is a range of data in the integrated framework of national accounts related to health care activity, for example expenditure data classified using *COFOG* and *COICOP*, the development and implementation of health accounts has been a long-standing activity for this wider purpose. It is recommended that to support integrated decision making, countries compile a series of thematic accounts that present data on the functions, providers and financing of health care systems. The standard for accounting for health care is described in *A System of Health Accounts* (*SHA)*. The *SHA* is a well-developed framework for classifying health expenditures on these different aspects of the health care system.

34.121 The thematic accounts for health are organised around a tri-axial system, defining (i) consumption of health care goods and services by function; (ii) provision of health care goods and services by industry; and (iii) financing of health care (i.e., sources of funding). What is consumed must be produced, meaning that setting up the system within a supply and use framework is a useful tool for ensuring consistency and completeness. As well, what is produced and consumed must be financed and hence a clear link and consistency can be established among the three axes.

34.122 The three axes each have their own classifications. The three key classifications in the thematic accounts for health are the classification of health care functions, the classification of health care providers, and the classification of health care financing schemes. Classifying the consumption of goods and services according to health care functions is the starting point for compilation and defines the boundaries of the health accounts.

34.123 Health care functions relate to "what is the purpose" or "the type of need a transaction or group of transactions aims to satisfy". This is the most fundamental classification within the thematic account for health and defines what is in and out of scope for "health care". There will always be borderline cases between health care and social care, especially concerning long-term care (LTC). The thematic accounts for health distinguish two elements of LTC: (i) health: medical or nursing care including the management of symptoms involving medical, paramedical and nursing care services, such as relieving pains or other symptoms, administering medication, performing medical diagnosis and minor surgery, dressing wounds, etc., as well as personal care services provided in response to limitations in self-care primarily due to disability and illness; and (ii) social: assistance services related to care that enables a person to live independently in a house or apartment, i.e., lower-level social care services to assist with instrumental activities of daily living primarily due to disability and illness. The thematic accounts for health include LTC (health) within its scope of health expenditures but it is also recommended to measure the expenditures related to LTC (social) to complement the health data.

34.124 The thematic accounts for health also provide a framework for the classification of health care goods and services, as described in Annex E of the *SHA*. The primary use of the product classification is to facilitate applying the measurement boundary and to select the products for estimating health care expenditures. The product classification in the thematic accounts is linked to the *CPC* and thus to the supply and use framework in the integrated framework of national accounts.

34.125 Table 34.9 provides a basic supply and use table for recording health care output and expenditure according to classes of health care functions and classifying supply in terms of health care providers and use in terms of types of users.

34.126 Household production of health care can be included in thematic accounts for health. In the *SHA* this inclusion is limited to those health services whose costs are partially or completely covered by dependency allowances. The associated transfers are treated as a quasi-salary and a corresponding "output value" is calculated. The wider literature supports the view that unpaid household care has a significant role in understanding health and social conditions and individuals' well-being. Thus, it is recommended that all unpaid household production of health and social care, and not limited to what is already recorded in the *SHA*, is included in the thematic accounts. This work should be undertaken in line with the discussion in section C.3 on the measurement of unpaid household service work, noting the importance of distinguishing between health care

and other care activities and also clarifying the role of supervisory care.

34.127 To support the reporting on and discussion of material well-being, indicators for health and social care can be built from the expenditure flow data in the health care accounts. These indicators include individual final consumption expenditures of health and social care with various breakdowns defined mainly by health care function, provider, and financing scheme. In the thematic accounts for health, the relevant expenditures also include intermediate consumption related to occupational health care. Where possible, measures in volume terms should be derived consistent with best practice described in chapter 18 on Measuring prices, volumes and productivity. Data can also be cross-tabulated according to different variables (e.g., household type) to support a range of analyses of household material well-being.

34.128 In monetary terms a core set of indicators includes health expenditures as a share of GDP, per capita health expenditures, expenditure by health care function, expenditure by age and sex of beneficiaries, and expenditure by income group of beneficiaries. In non-monetary terms indicators include labour input in health and social care with breakdowns by age, sex, employment status and other characteristics. Labour input data classified by occupation can be compiled following the *International Standard Classification of Occupations (ISCO*) noting the most relevant *ISCO* groups for health are sub-major group 22 (health professionals) and 32 (health associate professionals). Physical indicators of non-financial assets used in the production of health service can also be presented (e.g., number of hospital beds available).

Table 34.9 Basic health care expenditures supply and use table

Supply table

		Hospitals	Residential long-term care facilities	Providers of ambulatory health care	Providers of ancilliary services	Retailers and other market producers of medical goods	Providers of preventative care	Providers of health care systems and financing	Other secondary health care providers	Imports	Taxes less subsidies on products	**TOTAL SUPPLY**
		HP1	HP2	HP3	HP4	HP5	HP6	HP7	HP8			
Health & social care functions												
HC1	Curative care											
HC2	Rehabilitative care											
HC3	Long term care (Health)											
HC4	Ancilliary services											
HC5	Medical goods nsf											
HC6	Preventative care											
HC7	Governance and health systems & financing administration											
HC9	Other health care services nec											
HCR1	Long term care (Social)											
TOTAL OUTPUT												
R&D production of Health industry												

Use table

		Final consumption expenditures					Intermediate consumption - market producers	Exports	**TOTAL USE**
			Government		NPISH	Households			
		Central	State	Local					
Health & social care functions									
HC1	Curative care								
HC2	Rehabilitative care								
HC3	Long term care (Health)								
HC4	Ancilliary services								
HC5	Medical goods nsf								
HC6	Preventative care								
HC7	Governance and health systems & financing administration								
HC9	Other health care services nec								
HCR1	Long term care (Social)								
TOTAL OUTPUT									

Chapter 35: Measuring the sustainability of well-being

A. Introduction

35.1 Sustaining and increasing levels of well-being for populations as a whole, for groups within those populations and for future generations is at the heart of sustainable development. Chapter 2 on National accounts and its contribution to measuring well-being and sustainability (section B.1) describes the conceptual framing applied in the integrated framework of the SNA to support the measurement of sustainability and well-being. The framing recognises the links to the concept of sustainable development and the need to consider both current well-being and the well-being of future generations and including the distribution of well-being across population groups. The topic of sustainability emerges in relation to the well-being of future generations, i.e., assessing the capacity of a country or community to provide well-being in the future. As introduced in chapter 2, from an economic perspective, the capacity to provide well-being in the future is most readily interpreted in terms of the capital available to underpin future well-being with the relevant stocks of capital encompassing economic, natural, human and social capital.

35.2 From the perspective of economic theory, the rationale underpinning a capitals approach to assess sustainability is that non-declining real wealth per capita (i.e., the available stock of capital per person) is a necessary condition for past development to be considered sustainable (*Arrow et al, 2004; Dasgupta, 2001*). An alternative expression of this theory is that if real wealth per capita has declined then past development should not be considered sustainable. This economic rationale underpins the work of the World Bank, the United Nations Environment Program, various national statistical institutes and others in their measurement of wealth accounts (see chapter 2, box 2.1 for references). These measurement efforts track the change in wealth of countries in real terms for multiple capitals to gain insights into the sustainability of countries' capacity to provide well-being in the future. Work on wealth accounting reinforces the importance of considering stock measures in both physical (quantitative) and monetary terms for the assessment of sustainable development, thus moving beyond analysis that considers only flow measures of production, income and consumption, such as gross domestic product.

35.3 The use of a capitals approach to assess sustainability provides a broad and structured framework that is grounded in economic theory and can provide a starting point for the assessment of sustainability. However, it cannot be considered an all-encompassing approach. Two general limitations are noted here. First, not all relevant aspects of well-being and sustainability will fall within scope. Chapter 2, box 2.1, lists a number of well-being and sustainability measurement initiatives some of which apply or recommend a capitals approach but a number of which do not. The existence of a variety of approaches is not surprising since sustainability in any given context depends on a wide range of factors including the preferences and aspirations of people. Secondly, ideally the use of an indicator of real wealth (measured as the change in volume of wealth) requires a complete coverage of stocks of capital as well as high levels of detail about specific assets. This allows an aggregate indicator of real wealth to track substitution across stocks of capital over time. An indicator of this type would support assessment of weak and strong sustainability (discussed further in section F of this chapter). In practice, both the scope and the level of detail for the measurement of real wealth may be more limited than ideal.

35.4 Notwithstanding the limits of a capitals approach in providing definitive statements about sustainability, a capitals approach has the distinct advantage of also being able to provide a structured basis for the organization of a relatively comprehensive set of information on sustainability. Thus, this chapter uses four capitals – economic, natural, human and social – as the starting point for describing accounting approaches for the organisation of relevant data. In turn, this provides the capacity for decision makers and analysts to assess sustainability according to their own assumptions and framings. Put differently, accounting can underpin frameworks within which data about the quantity, quality, condition and monetary values of the capitals can be placed in a common context. The subsequent assessment of the effects of future changes in the composition of the capitals and the associated implications for well-being is a task allocated to analysts.

35.5 The development of an historical time-series of descriptive information about the various types of capital as provided through the implementation of accounting approaches can itself help to underpin the development of alternative framings and interpretations of sustainability, for instance by providing data on the extent to

which a stock of capital has been maintained or there has been substitution across types of capitals. For example, accounting data about stocks of natural capital in physical terms can inform the assessment of sustainability in combination with information on environmental thresholds and limits (e.g., from the planetary boundaries framework, *Rockstrom et al, 2009*).

35.6 A focus on measuring the various capitals using an accounting approach has two related advantages. Firstly, within an accounting approach the measurement of stocks is undertaken in a coherent manner with the measurement of flows. Thus, information about the benefits (and loss of benefits) arising from the use of the stocks of capital can be linked to those stocks. In a system wide context, the mapping of benefit flows associated with different capitals and across multiple locations and economic units provides a rich information set. Secondly, the information is organised such that it supports description of the relationship between investing in stocks of capital (e.g., through education, restoration of ecosystems, facilitating social networks) and the maintenance of benefits from those stocks into the future, and thus facilitates analysis of appropriate policy responses.

35.7 Within this broad setting of sustainability, this chapter introduces a range of material relevant to the measurement of stocks of capital, both in the context of the integrated framework of national accounts and in related accounting frameworks. Section B considers the general descriptions and measurement boundaries for the different types of capital and clarifies the connection to the asset boundary of the integrated framework of the SNA. Section C provides a more extensive introduction to the measurement of natural capital using the concepts and treatments in the *SEEA*. Sections D and E discuss the measurement of human and social capital. Finally, section F discusses a number of measurement considerations concerning capital related concepts, such as capacity and resilience, connections to financial assets and issues regarding valuation.

B. Descriptions and boundaries in measuring types of capital

35.8 This section considers the general descriptions and measurement boundaries for the different types of capital and clarifies the connection to the asset boundary applied in the integrated framework of the SNA. Commonly in economics and accounting the terms capital and asset are used interchangeably. For example, in the integrated framework of the SNA, expenditure on fixed assets is referred to as gross fixed capital formation. In the discussion here the term capital is used to refer to broad groups of individual assets which can each be characterised in general terms as items that provide benefits in the future. Data about the different capitals and the individual assets can be presented in physical (quantitative) terms or monetary terms.

35.9 The SNA's integrated framework incorporates measures concerning a range of different types of capitals within its balance sheet and associated accounts. The balance sheet of the sequence of economic accounts encompasses all stocks of capital that satisfy the definition of an economic asset in chapter 11 on Capital account. This scope covers produced non-financial assets (excluding natural resources), non-produced non-financial assets (excluding natural resources), natural resources (i.e., natural capital excluding ecosystem assets, covering, for example, land, mineral and energy resources and biological resources) and financial assets and liabilities. A complete description of all components of the balance sheet in the sequence of economic accounts is provided in chapter 14 on Balance sheet.

35.10 Critical to the discussion in this chapter is that the scope for measurement of assets in the integrated framework of the SNA is determined with a focus on the monetary value of the stocks of capital which is assessed in terms of expected future flows of (i) economic benefits arising from the production of goods and services within the production boundary of the integrated framework; and (ii) economic benefits from monetary transactions in assets (e.g., sales of land) or from receipts of property income. Furthermore, the scope of the balance sheet in the SNA's sequence of economic accounts is limited to those assets over which economic ownership are established, including those assets subject to collective ownership by government on behalf of society as a whole.

35.11 From a sustainability measurement perspective, this scope supports analysis of, for example, the extent to which the level of investment in fixed assets is sufficient to both offset depreciation of those assets and underpin future production of goods and services. Such analysis might be applied in the context of individual industries or institutional sectors and can also be considered in the context of investment in specific asset types, for example, public infrastructure, such as roads and telecommunications networks, delivering

collective services,. However, as introduced in chapter 2 on National accounts and its contribution to measuring well-being and sustainability, while this scope of measurement and analysis is important, it is not complete with respect to sustainability since there is a range of other factors that should be considered.

35.12 To support wider measurement and analysis of sustainability, four types of capital are identified: economic capital, natural capital, human capital and social capital. Within this typology, the balance sheet of the SNA's sequence of economic accounts includes economic capital (see section B.1 below) and some aspects of natural capital. The use of a wider coverage of capitals, i.e., beyond the assets covered in the SNA's sequence of economic accounts, provides an improved base for the analysis of sustainability. The wider coverage recognises explicitly that other aspects of natural capital, such as the contributions of ecosystems to well-being that are not exchanged in markets (e.g., through water purification, coastal protection, etc.), and the stocks of human and social capital are important considerations. Figure 35.1 provides a summary of the different components of the four capitals and the following sections provide additional details on the relevant measurement boundaries for each type of capital.

Figure 35.1: Components of four capitals

<table>
<tr><th rowspan="2">Type of capital</th><th rowspan="2">Main components</th><th colspan="3">Links to SNA and SEEA measurement boundaries</th></tr>
<tr><th>SNA</th><th colspan="2">SEEA</th></tr>
<tr><td rowspan="3">Economic capital</td><td>Produced non-financial assets (excluding natural resources)</td><td rowspan="6">Assets in the integrated framework of national accounts</td><td colspan="2"></td></tr>
<tr><td>Non-produced non-financial assets (excluding natural resources)</td><td colspan="2"></td></tr>
<tr><td>Financial assets and liabilities</td><td colspan="2"></td></tr>
<tr><td rowspan="3">Natural capital</td><td>Natural resources
• Land
• Mineral and energy resources (renewable and non-renewable)
• Biological resources
• Water resources
• Other natural resources</td><td rowspan="3">Environmental Assets</td><td>Individual natural resources*</td></tr>
<tr><td>Ecosystem assets</td><td></td><td>Ecosystem assets</td></tr>
<tr><td colspan="2">Human capital</td><td></td><td colspan="2"></td></tr>
<tr><td colspan="2">Social capital</td><td></td><td colspan="2"></td></tr>
</table>

* Note that the SEEA excludes the radio spectra and renewable energy resources.

35.13 Accounting for different types of capitals should also encompass measurement beyond the monetary value of stocks of capital. Four additional considerations are of particular relevance. Firstly, for all capitals, accounting for the stocks in physical terms and organizing relevant information on the quality, condition and composition of the stocks is fundamental to both the valuation of the stocks and to understanding the sustainability of those stocks, i.e., their capacity to contribute to well-being in the future. Of particular importance in assessing this capacity is understanding the physical thresholds and limits of different types of

capital. For example, assessing the capacity to sustainably harvest fish stocks will include, among many other factors, consideration of the size and age structure of the fish stock and the potential rate of replacement of the stock.

35.14 Secondly, there are flows associated with each stock that are recorded in the SNA's sequence of economic accounts and data on these flows will be relevant in supporting an understanding of the changes in the stocks over time and the associated connections to well-being. For example, in relation to human capital, although the stock is not included in the balance sheet, the sequence of economic accounts records flows of remuneration of employees and expenditure on health care, education and training.

35.15 Thirdly, while some flows associated with each stock are recorded in the sequence of economic accounts, all stocks of capital have additional flows that should be considered in a more complete assessment of sustainability. These additional flows lie outside the production boundary applied in the integrated framework of national accounts, and include ecosystem services generated by natural capital (i.e., the contributions of ecosystem assets to the benefits that are used in economic and other human activity (*SEEA Ecosystem Accounting 2024,* paragraph 2.14)), unpaid household service work (including volunteering contributions), and intrinsic values associated with historic and heritage sites. Recording information about these flows, in particular those beyond the production boundary of the integrated framework, facilitates a wider discussion on sustainability, as the implications of policy choices and investment decisions can be considered more holistically.

35.16 Also relevant for the analysis of sustainability is information on flows concerning negative effects on stocks of capital, such as flows of pollutants and emissions. These flows can reduce the condition of human capital (e.g., through impacts on human health), fixed assets (e.g., through damage to buildings) and ecosystem assets (e.g., through reduced water quality in rivers). Many of these flows can be recorded using accounting frameworks and thus can readily complement the data in the SNA's sequence of economic accounts (e.g., by recording data on flows of pollution by industry).

35.17 Fourthly, the assessment of well-being and its sustainability must also consider the distribution of capitals and the associated benefits. This topic is most commonly considered in relation to the distribution of income, consumption and wealth across different household groups. Chapter 32 on Households provides a discussion on distributional accounts for households within the SNA's sequence of economic accounts and chapter 34 on Measuring well-being considers the potential to extend these accounts to encompass other stocks and flows, such as the distribution of unpaid household service work and consumer durables. Distributional accounts for wealth are not considered further in this chapter.

35.18 In the following subsections, each type of capital is described in turn. This is an understandable structure and is commonly applied in the measurement of capitals, for example in wealth accounting. However, this structure serves to hide the fundamental connections that exist both within each type of capital and among different types of capital; connections which will vary across locations and over time. Thus, while accounting for each of the stocks of capital on its own provides a strong baseline of information, the assessment of sustainability in any given context must consider the (likely non-linear) interactions that are expected to emerge in the future and also consider the different ways in which each capital contributes to well-being in any given context. Furthermore, there will be considerable support for analysis and interpretation in providing as fine a level of detail as possible about all types of capital (e.g., in terms of age, location and ownership). For this reason, the aggregation across capitals and interpretation of any balance sheet values in monetary terms, should be undertaken cautiously and using as much complementary data as possible, for example concerning the age and condition of the stock.

1. The scope of economic capital

35.19 ***Economic capital refers to the stock of economic assets that are created through the direct involvement of economic units and which are under the control of an institutional unit, either individually or collectively.*** The scope of economic capital includes:

- Produced non-financial assets, including fixed assets, inventories and valuables, but excluding produced natural resources (i.e., cultivated biological resources) which are included under natural capital. There are many types of produced non-financial assets: buildings, machinery and

equipment, infrastructure such as roads, dams and airports, and intellectual property products (e.g., software and artistic originals).

- Non-produced non-financial assets, such as contracts, leases and licenses, marketing assets and purchased goodwill, but excluding non-produced natural resources which are included under natural capital.
- Financial assets and liabilities.

35.20 Economic capital is a simplifying label to refer to this set of assets. It is useful in the context of discussing sustainability to support communication of the distinction between these assets and the other types of capital. Other labels are also used to refer to this set of assets, most commonly produced capital, but also man-made capital, manufactured capital and built capital. The label "economic" is applied in an SNA context to support a distinction from the long-standing SNA term "produced (non-financial) assets". Importantly, the use of the label "economic" does not imply that the other types of capital have no economic value and it is noted that some aspects of natural capital are included in balance sheets in the SNA's sequence of economic accounts (see figure 35.1). The general literature on economics recognizes that natural, human and social capital all generate benefits, even if these benefits are not captured within the production boundary applied in the integrated framework of national accounts.

35.21 The definitions, measurement boundaries and accounting treatments for all of the components of economic capital are thoroughly explained in relevant chapters of the SNA, in particular chapters 11 to 14. In relation to the measurement of the relevant stocks, the discussion in chapter 17 on Capital services is most relevant as it describes the concepts and methods for estimating balance sheet values in monetary terms of produced non-financial assets (constituting the main part of economic capital and commonly referred to as the "capital stock") and associated measures of capital services (including depreciation). Specific note is made of the inclusion, as supplementary items, of more detailed classes in the classification of non-financial assets in the SNA, to support analysis of the energy transition from the use of non-renewable to renewable energy sources. Under class "Other structures", two "of which" items have been included concerning renewable installations and fossil fuel installations. Under class "Transport equipment", an "of which" item has been included concerning electric powered transport equipment, and under class "Other machinery and equipment", two "of which" items have been included concerning carbon capturing equipment and nuclear fusion equipment.

35.22 The measurement of balance sheet values in monetary terms for produced non-financial assets is generally dependent on non-monetary information (or assumptions) about the stock including its age, its expected life and its pattern of contribution to production over time. In addition, using information on the prices of produced non-financial assets, it is possible to derive estimates of the volume of the stock of produced non-financial assets, i.e., the quantities of the stock weighted by their relative prices. As described in the introduction, indicators of changes in the volume of stocks, are of direct relevance in the analysis of sustainability and productivity.

35.23 For the assessment of sustainability, it will also be relevant to present separately the non-monetary information about produced non-financial assets alongside estimates of their value in monetary terms, including the age and expected life of different asset types. Such information is commonly collated to support implementation of the perpetual inventory method (PIM) (see chapter 17 for details). Ideally, estimates of expected asset lives and other forward-looking assumptions would incorporate information on the condition of the produced non-financial assets (for example, from an engineering perspective) and expected levels of use (for example, in relation to population growth). This additional information, alongside information recorded on other changes in the volume of assets and liabilities accounts, for example, exposure to catastrophic events (such as fire, flood, or earthquake) (see chapter 13 on Other changes in assets and liabilities accounts), could also be organised and presented in a way to support analysis of sustainability.

2. The scope of natural capital

35.24 ***Natural capital (AN5X) refers to the combination of natural resources and ecosystem assets, of which the latter are not explicitly recognized as economic assets in the integrated framework of national accounts***. The SEEA provides the international standard to measure natural capital and has agreed concepts, definitions and accounting treatments for measuring the components of natural capital in physical and monetary terms,

including approaches to recognizing benefits beyond the production boundary applied in the integrated framework of national accounts. To establish a measurement scope for the stock of natural capital, *SEEA Central Framework 2012,* paragraph 2.17, defines ***environmental assets as the naturally occurring living and non-living components of the Earth, together constituting the biophysical environment, which may provide benefits to humanity***. It is from this broad, biophysical scope, that the two primary measurement categories emerge, i.e., natural resources and ecosystem assets.

35.25 ***Natural resources (AN3) are assets that naturally occur, such as land, mineral and energy resources, water resources, and animal, tree, crop and plant resources, that have an economic value and over which ownership may be enforced and transferred. Environmental assets over which ownership rights have not, or cannot, be enforced, such as high seas beyond national jurisdiction and most parts of the atmosphere, are excluded.*** Natural resources are included in the balance sheet of the SNA's sequence of economic accounts when they satisfy the definition of economic assets applied in the integrated framework of the SNA. In addition to the types of natural resources mentioned in the above, natural resources also include some other resources, such as radio spectra. Chapter 11 on Capital account and chapter 14 on Balance sheet provide a complete set of definitions and descriptions of these natural resources from the perspective of the asset boundary applied in the integrated framework of national accounts.

35.26 ***Ecosystem assets (AN4X) are contiguous spaces of a specific ecosystem type characterized by a distinct set of biotic and abiotic components and their interactions. Ecosystem assets are not explicitly recognised as economic assets in the integrated framework of national accounts.*** There are a wide range of types of ecosystem assets including savannas, coral reefs, lakes, wetlands and urban ecosystems where each occurrence of a specific ecosystem type is treated as a distinct ecosystem asset. When accounting at a national level, all ecosystem assets within the economic territory of a country (including its exclusive economic zone (EEZ)) should be included such that the total area of the economic territory is accounted for.

35.27 While this framing of natural capital encompasses stocks of natural resources and ecosystem assets, these two categories of natural capital are not mutually exclusive and there is a clear overlap between ecosystem assets and a number of natural resources including land, biological resources and water resources. For example, from the perspective of natural resources the stock of fish in a lake is a distinct asset, while from the perspective of ecosystem assets the lake is a type of ecosystem and the fish stock is a feature or characteristic of that asset in addition to the water, plants and other animals in the lake. In effect, accounting for the stock of natural resources has a focus on individual components of the biophysical environment, whereas accounting for the stock of ecosystem assets focuses on ecosystems as communities of plants, animals and other organisms interacting with their physical environment.

35.28 A further important point of difference between accounting for natural resources and accounting for ecosystem assets lies in the range of benefits which are within scope of measurement. For individual natural resources, accounting in monetary terms in both the integrated framework of the SNA and the *SEEA Central Framework* is limited to recording the contributions of natural resources to benefits that are within scope of the production boundary applied in the integrated framework of national accounts. For example, for timber

35.29 resources, only the contribution of the trees to the output of the forestry industry is recognised. In effect, for most natural resources other than land, this limits the accounting to recording those products that are harvested or extracted from the environment.

35.30 In contrast, when accounting for ecosystem assets a wider measurement scope is applied that recognises ecosystem services, i.e., the contributions of ecosystem assets (such as a forest), to benefits both within the production boundary applied in the integrated framework of national accounts (such as timber) and outside the production boundary of the integrated framework, recognising that the scope of measurement may change over time as institutional contexts change, for example through the development of environmental markets or payments for ecosystem services schemes. To facilitate this recording, in ecosystem accounting the contributions of ecosystem assets are separately recorded as flows of ecosystem services, whereas in the integrated framework of national accounts the contributions of natural capital to products in the integrated framework are implicit in measures of gross operating surplus. The use of a broader scope of benefits and the explicit recording of ecosystem services permits the recognition of a range of contributions from natural capital, including among other things, air filtration services, flood mitigation services, coastal protection services, global climate regulation services, water purification services and recreation-related services. A more complete introduction to ecosystem accounting is provided in section C below.

35.31 Overall, the combination of natural resources and ecosystem assets provides for the comprehensive measurement of the stock of natural capital. However, given the overlapping scope of these two components, careful partitioning of monetary values is required if there is a requirement for aggregation, so that there is no double counting.

35.32 Generally, individual elements and substances such as nitrogen, oxygen, carbon, soil nutrients, salt and phosphate that are present throughout the biophysical environment and commonly embodied in natural resources listed above are not treated as distinct assets. However, in some cases, and setting aside the individual elements (gold, copper, lithium) that are within the scope of mineral resources, specific deposits of other elements and substances that are harvested or mined can be treated as natural resources. This would include, for example, deposits of salt that are mined and extracted. Note that carbon embodied in trees and other biological resources may be recorded separately but is not considered a distinct asset.

35.33 From the perspective of the integrated framework of national accounts, including the balance sheets, the scope of natural capital excludes environmental assets over which ownership rights have not, or cannot, be established, such as open seas or the atmosphere. Further, stocks of natural capital are only recognized in the integrated framework of national accounts to the extent that they provide economic benefits to their owners, either individually or collectively. In this context, economic benefits refer to gains arising from the economic activities of production, consumption or accumulation.

35.34 Thus, for example, mineral and energy resources are included in the balance sheet of the SNA's sequence of economic accounts to the extent that they are commercially recoverable given current and expected technology and relative prices (in practice approximated by those resources for which permissions to exploit have been granted, and/or those for which the existence is explicitly recognised by (past) monetary transactions, see paragraph 11.186); and potentially recoverable resources are excluded if it is not foreseen that they will be exploited in the near future. Similarly, water resources are included to the extent that their scarcity leads to the establishment of ownership and/or use rights, market valuation and some measure of economic control, while biological resources are included to the extent that ownership rights are established, which for migrating resources may be evidenced through a quota regime.

35.35 As detailed further in section C below, the measurement scope of natural resources applied in the *SEEA Central Framework* is broader than the one applied in the integrated framework of the SNA, by including all natural resources irrespective of their current ownership status or provision of economic benefits. The only restriction in the *SEEA Central Framework* concerns the exclusion of those resources outside the economic territory over which a country has control, which for those countries with a maritime boundary will include its Exclusive economic zone (EEZ). On the other hand, in the *SEEA Central Framework,* the scope of natural resources is narrower compared to the integrated framework of the SNA, as it does not include cultivated biological resources. Furthermore, the radio spectrum is not considered part of the biophysical environment and hence is not included as part of natural resources but, in the integrated framework of the SNA, it is included as part of natural resources. Also, the integrated framework of the SNA provides a more comprehensive accounting for renewable energy resources.

35.36 A common topic of discussion in the measurement of natural capital is biodiversity. Following the *Convention on Biological Diversity (CBD)*, "biodiversity is the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems". In short, three levels of biodiversity are recognised – genetic diversity, species diversity and ecosystem diversity. From an accounting perspective, it is possible to organise data related to measures of diversity at each of these levels, but diversity itself is not directly measured. For example, accounts can record the extent of different ecosystem types across a country and accounts can be used to record data about certain species. Measurement of ecosystem assets will support the measurement of ecosystem diversity. *SEEA Ecosystem Accounting* provides a longer discussion on the links between accounting and the measurement of biodiversity.

3. The scope of human capital

35.37 A general definition of ***human capital (AN6X) is the knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being***. This definition provides a clear foundation that incorporates both economic and non-economic benefits arising

from the use of human capital by individuals. From an economic perspective, the creation of human capital, or put differently, the acquisition of knowledge, skills, competencies and attributes, increases the productive potential of the individuals in an economy and is a source of future economic benefits to them. In addition to knowledge and skills, the productive potential of individuals will be influenced by their health and life expectancy.

35.38 In general, much of the focus from a national accounting perspective on human capital has been on the connection between human capital and labour inputs to production with the value of the stock of human capital being measured either in terms of future flows of labour earnings taking into account the current age and education profile and expected retirement ages, or in terms of costs involved in generating human capital, e.g., education costs. The focus on the link to labour inputs to production supports standard macroeconomic analysis, including productivity measurement.

35.39 However, there are also important contributions of individuals' knowledge, skills, competencies and attributes to activities outside the production boundary applied in the integrated framework of national accounts, and extended measurement of human capital to recognize these contributions, for example in the areas of unpaid household service work, both to individual households and to wider society. is encouraged. Consequently, a wider range of contributions can be recognized (i.e., beyond labour inputs to the production of goods and services within the production boundary of the integrated framework) and also a wider range of individuals can be included in the stock of human capital (i.e., those people outside the labour force).

35.40 Section D provides a longer discussion on the measurement of human capital and the links to measurement of education and training are presented in chapter 34 on Measuring well-being. There is also relevant content in chapter 16 on Labour that presents a range of information on the composition and structure of the labour force which, in turn, supports understanding of the stock of human capital.

4. The scope of social capital

35.41 The concept of social capital can be expressed in a number of different ways. For the purposes of discussion here, ***social capital (AN7X) refers to the social norms, shared values and institutional arrangements that foster co-operation within or among groups*** (*OECD, 2001*). As noted in chapter 2 on National accounts and its contribution to measuring well-being and sustainability, measurement of social capital is a developing area but, at present, its measurement from an accounting perspective, in particular concerning its valuation, is not sufficiently advanced for a substantive discussion of measurement approaches to be included here. Nonetheless, section E of this chapter provides an introduction to the concepts and measurement of social capital recognising the need for research and discussion to establish the ways in which social capital can be effectively defined and measured for statistical and accounting purposes.

C. Measuring natural capital using the *SEEA*

35.42 As introduced in section B.2, the *SEEA* complements the SNA by providing the statistical standards and accounting framework for the organisation of data about natural capital and its connection to the economy. This provides the basis for measuring the wider scope of natural capital that is relevant for the analysis of sustainability.

35.43 This section provides a short overview of the accounting described in the *SEEA* and highlights distinctions between the treatments in the *SEEA* and those applied in the compilation of the integrated framework of national accounts. The section is structured following the four broad accounting areas of the *SEEA*: (i) accounting for natural resources (excluding land); (ii) accounting for land and ecosystems; (iii) accounting for environmental flows; and (iv) accounting for environmental activities and transactions (e.g., environmental protection activity and environmental taxes). A full description of relevant concepts, definitions, accounting rules, classifications and other content is provided in the *SEEA Central Framework* and the *SEEA Ecosystem Accounting* and in a number of related documents and guidance materials.

35.44 An initial motivation for the development of the *SEEA* was the desire to recognise explicitly the costs arising from economic activity of using, depleting or degrading natural capital, such that measures of economic growth, for example gross domestic product (GDP), could be adjusted and hence reflect more completely the

implications and sustainability of patterns of economic growth. Over time, while this motivation has remained, the richness of the connections between the environment and the economy has become more fully understood and has driven the breadth of measurement themes listed above.

35.45 A key role of the *SEEA* is therefore to bring an increased level of consistency and coherence across each of these measurement themes using accounting-based approaches recognising that, in general, measurement of the environment has been undertaken in a less structured and coordinated way compared to measurement of the economy. Three aspects of the application of accounting approaches in the *SEEA* are highlighted here. Firstly, the *SEEA* develops accounts in both physical and monetary terms for both stocks and flows related to natural capital. This focus supports direct integration of the rich body of scientific research and data about the environment and ensures that measures in monetary terms incorporate relevant biophysical data.

35.46 Secondly, the *SEEA* applies and adapts the accounting rules and treatments of the integrated framework of the SNA with the intent of supporting the integration of environmental data with the standard economic data organised within the SNA's integrated framework. This connection is present in the *SEEA*'s articulation of production boundaries and asset boundaries, approaches to monetary valuation and the structure of accounts such as supply and use tables and asset accounts.

35.47 Thirdly, the *SEEA* uses standard classifications and typologies to build connections across the different accounts, including the integrated framework of national accounts. These classifications and typologies cover industries, institutional sectors, products, natural inputs, residuals, environmental assets, environmental purposes, ecosystem types and ecosystem services. These classifications and typologies also support building connections between the definitions and classifications used by the individual subject matter experts (e.g., energy and water experts) and the standard economic classifications with the objective of integrating existing subject matter specific data with economic data through a structured accounting approach.

35.48 Overall, the *SEEA* aims to provide a rich description of natural capital and its links to the economy. This description emerges both through compiling accounts that provide a baseline of coherent data and through establishing a common language for economists, environmental scientists, accountants and statisticians to support the organisation and exchange of data about the many components of natural capital and their links to the economy.

1. Accounting for natural resources

35.49 Accounting for natural resources is described in the *SEEA Central Framework*. The aim is to compile comprehensive asset accounts in physical and monetary terms for individual natural resources. The *SEEA Central Framework* describes asset accounts for both non-renewable and renewable natural resources including mineral and energy resources, soil resources, timber resources, aquatic resources (in particular fish stocks) and water resources. In the *SEEA Central Framework,* natural resources are considered to only refer to non-produced resources, although for biological resources, including timber and aquatic resources, accounting for cultivated biological resources is also supported. The purpose in developing these accounts is to organize data on the stocks and changes in stocks of each of the resources and hence support an understanding of whether the current patterns of extraction and harvest of resources is sustainable.

35.50 For an individual natural resource, an indicator of sustainability is depletion reflecting the decline in the quantity of a resource that is not offset by growth of the stock recognising that the degree of growth will be dependent on the extent and condition of the underlying stock of the resource. Depletion can be measured for each resource in physical terms and in monetary terms by estimating prices for the value of the change in the stock in situ (see *SEEA Central Framework,* Annex 5.1). The *SEEA Central Framework* describes the accounting entries that are relevant for attributing the cost of depletion against the extractor of the resource. The integrated framework of national accounts records depletion as a cost of production of the extractor as described in chapter 7 on Production account, chapter 11 on Capital account, chapter 14 on Balance sheet and chapter 27 on Contracts, leases, licenses and permits.

35.51 The natural resource asset accounts described in the *SEEA Central Framework* follow the same general structure as asset accounts in the integrated framework of the SNA, although there is a focus on recording changes in the physical stock of resources. The asset accounts in the SEEA Central Framework start with an entry for the opening stock at the beginning of the accounting period, then show entries for additions to stock

and reductions in stock, including changes due to normal growth, discoveries, extraction, normal losses and changes due to catastrophic events, and finally conclude with an entry for the closing stock at the end of the accounting period. For the asset accounts in monetary terms a revaluation entry is also included.

35.52 The monetary valuation of natural resource stocks and changes in stocks in the *SEEA Central Framework* aligns with those in the integrated framework of the SNA and the same valuation concept is applied. Thus, balance sheet values in monetary terms and measures of depletion in monetary terms are able to be used commonly in both accounting systems. By encompassing measurement in both monetary and non-monetary terms, the description of accounting for natural resources in the *SEEA Central Framework* provides a richer and more comprehensive discussion than is provided in the integrated framework of the SNA, but one which can be used to support directly the compilation of estimates for the integrated framework of national accounts.

35.53 The following table shows the entries that are most likely for different types of natural resources and provides a stylized overview of the information organised and presented concerning natural resources using the *SEEA Central Framework*. The focus of each asset account is on a single natural resource with the scope generally referring to the quantity of a resource within a country. The measurement of depletion in physical terms will generally focus on measurement of extraction, but in the case of renewable resources the growth in stock will also be relevant. Reclassifications concern changes arising from a resource being used for a different purpose.

Table 35.1: General structure of the asset accounts for natural resources

		Mineral and energy resources	**Land**	**Timber resources**	**Aquatic resources**	**Water resources**
Opening stock of resources		Yes	Yes	Yes	Yes	Yes
Additions to stock of resources						
	Growth in stock	Not applicable	Yes*	Growth	Growth	Precipitation Return flows
	Discoveries of new stock	Yes	Not applicable	Not applicable	Yes*	Yes*
	Upwards reappraisals	Yes	Yes	Yes*	Yes*	Yes*
	Reclassifications	Yes	Yes	Yes	Yes	Not applicable
	Total additions to stock					
Reductions in stock of resources						
	Extractions	Extractions	Not applicable	Removals	Gross catch	Abstraction
	Normal reductions in stock	Not applicable	Not applicable	Normal losses	Normal losses	Evaporation Evapotranspiration
	Catastrophic losses	Yes*	Yes*	Yes	Yes	Yes*
	Downwards reappraisals	Yes	Yes	Yes*	Yes*	Yes*
	Reclassifications	Yes	Yes	Yes	Yes	Not applicable
	Total reductions in stock					
Closing stock of resources		Yes	Yes	Yes	Yes	Yes

* An asterisk indicates that this flow is not usually a significant flow for the resource or it is typically not separately identified in the source data. In practice, not all cells that show the possibility of an entry here should be shown separately in the published accounts for each type of resource.

2. Accounting for land and ecosystems

35.54 Accounting for land and ecosystems is described in both the *SEEA Central Framework* and the *SEEA Ecosystem Accounting*. The starting premise is that a geographic area, such as the total area of the economic territory of a country, can be fully delineated into different types of areas according to agreed concepts, definitions and classifications. This measurement scope is broader than that applied in the integrated framework of the SNA which only includes areas of land that satisfy the definition of an asset applied in the integrated framework. Furthermore, the scope of the SEEA explicitly includes all inland waters and marine areas within a country's Exclusive Economic Zone (EEZ).

35.55 Tracking the extent and changes in the extent of a country's land use, land cover and ecosystem types can provide important information on how certain areas of a country are changing (e.g., due to urban expansion), support measurement of changes in the condition of the environment, monitor the balance of ways in which land is used (e.g., for agriculture) and underpin analysis of future trends. Tracking ecosystem conditions can provide information about how human activity impacts on the quality of the environment. In accounting for land and ecosystems, the relevant non-monetary data can be presented in tabular form but it is also common and of significant analytical benefit, to present data in the form of maps which best supports spatial analysis. Spatial analysis is needed since, at a national scale, it is likely that the effects of important changes occurring at landscape scale are overlooked and the associated sustainability challenges are ignored.

35.56 In accounting for land, the *SEEA* and integrated framework of the SNA have a different framing. The integrated framework considers land as a type of natural resource alongside timber, fish and minerals and, as a consequence, incorporates any associated soil resources within land. The *SEEA*, on the other hand, has a distinct view that "land is a unique environmental asset that delineates the space in which economic activities and environmental processes take place and within which environmental assets and economic assets are located". A consequence of this conceptualisation is that land itself is non-depletable – i.e., the space cannot be reduced over time. However, the characteristics or attributes of that space can change and it is these characteristics that are the most common focus of accounting for natural capital. The changes in characteristics may be large, for example when natural ecosystems are converted to anthropogenic ecosystems (such as urban areas, croplands or reservoirs). This approach contrasts with the framing of the integrated framework of national accounts. in which the entry point is whether a particular area provides economic benefits.

35.57 An important statistical outcome in conceptualising land (including inland water and marine areas) as space, is that accounting for land provides the foundation for ensuring a comprehensive measurement of all ecosystems and natural resources, in a similar way to that of a business register providing a comprehensive basis for the measurement of economic activity of a country.

35.58 The delineation of areas within a country can be undertaken using a range of concepts and methods. The two primary concepts for accounting for land are land use and land cover. Land use reflects both (i) the activities undertaken and (ii) the institutional arrangements put in place for a given area for the purposes of economic production, or the maintenance and restoration of environmental functions (*SEEA Central Framework 2012,* paragraph 5.246). Examples of land use include agriculture and forestry. Land cover refers to the observed physical and biological cover of the Earth's surface and includes natural vegetation and abiotic (non-living) surfaces. Examples of land cover include herbaceous crops, tree-covered areas, grass-covered areas and water bodies. The *SEEA Central Framework* provides a full description of accounts for land use and land cover and the associated classifications.

35.59 Accounting for ecosystems commences with delineating ecosystem assets within an ecosystem accounting area (e.g., a country, province, catchment) based on a classification of ecosystem types, for example, forest ecosystems, savannas, mangroves, estuaries, lakes and urban ecosystems, and how their extent is changing over time. The difference between ecosystem extent accounts and land accounts does not concern the account structure but the different classification of areas. In short, ecosystem extent accounts focus on the ecological characteristics of spatial areas (based on functional, structural and compositional characteristics of different ecosystem types) rather than a single characteristic such as land use or land cover.

35.60 Other aspects of accounting for ecosystems build on the delineation of ecosystem assets to provide a structured and coherent data set on the condition of ecosystem assets, the ecosystem services generated by ecosystem assets in physical and monetary terms, the use of ecosystem services by different economic units,

and the value of stocks and changes in stocks, including degradation, of ecosystem assets based on the present value of the expected ecosystem service flows. The valuation of ecosystem services and ecosystem assets in monetary terms is discussed further in section F.2.

35.61 The core components of the ecosystem accounting framework are shown in figure 35.2, while figure 35.3 shows the set of ecosystem accounts. *SEEA Ecosystem Accounting* provides a description of the concepts, definitions, classifications and accounting treatments. Collectively, the information set established through ecosystem accounting provides a basis for a wide range of analysis about the connection between natural capital and the economy including, for example, the potential to estimate a range of effects of changes in ecosystems on different economic units. For example, the effects of excess flows of nitrogen into rivers on downstream users including water supply companies and those visiting for recreation.

Figure 35.2: The general ecosystem accounting framework (*SEEA Ecosystem Accounting*)

Figure 35.3: Connections between the ecosystem accounts (*SEEA Ecosystem Accounting*)

35.62 For some types of land, in particular agricultural land, forest land and urban areas, all of which are in scope of ecosystem accounting, there will be an overlap between the monetary value of ecosystem assets and the value of the land recorded in the balance sheet of the integrated framework of national accounts. This overlap arises because the ecosystem services generated by those areas include some services which contribute to economic benefits for the owners of the land. For example, the value of agricultural land will be linked to the supply of crop provisioning services. Consequently, care needs to be taken in integrating measures of ecosystem asset values in monetary terms with the value of land and other assets in the integrated framework of the SNA. A discussion on this topic is presented in *SEEA Ecosystem Accounting,* chapter 11.

35.63 The core ecosystem accounting framework can be applied in a range of different ways using the general principles of thematic and extended accounting as described in chapter 38 on Thematic and extended accounts. This includes accounting for stocks of carbon, for oceans, and for links between ecosystems and economic activities such as agriculture and tourism.

3. Accounting for environmental flows

35.64 A fundamental component in the *SEEA Central Framework* is the description of standard approaches to the recording of data about environmental flows. Environmental flows concern flows of substances such as water, energy, solid waste, air emissions, that move from the environment to the economy (natural inputs), within the economy or from the economy to the environment (residuals) (see figure 35.4). The tracking of environmental flows supports direct connection to data on production and consumption in the integrated framework of national accounts and more generally, provides insight into the pressures and impacts on the environment from different industries and how this is changing over time. The information can be readily linked to measuring the success of progress toward a more circular economy, a common focus of sustainability policies. Further, these accounts are essential for building footprint indicators that reflect the quantity of carbon, energy, materials, water and emissions embedded in products being consumed domestically or traded internationally.

Figure 35.4: Flows between the economy and the environment (*SEEA Central Framework*)

35.65 Accounting for environmental flows is undertaken in physical terms for each substance using a supply and use structure with the environment being included as an additional supplier and user. The physical supply and use tables (PSUT) provide a rich information set linking the flows of each substance to extracting or generating industries. For example, the energy PSUT organizes data on flows of energy from different natural inputs (coal, oil, gas, biomass) to economic units and through the economy; and the air emissions PSUT organises data on the flows of air pollutants generated by different industries.

35.66 Generally, PSUTs are compiled at national level but where they can be compiled at a sub-national scale (for example, water PSUTs compiled by catchment), the variation in environmental pressures and impacts across the country can be identified and, ideally, linked to data from the ecosystem accounting on the changing condition of ecosystem assets. For example, data on the condition of rivers might be linked to data from the water PSUT on abstraction of water and generation of wastewater. PSUTs are usually compiled on an annual frequency but higher frequencies can also be compiled. For example, quarterly air emission accounts can be compiled and disseminated side by side with quarterly estimates of GDP to track progress towards a low carbon economy.

35.67 In addition to these flows of natural inputs, products and residuals, flows of ecosystem services can be recorded in supply and use tables in both physical and monetary terms. These tables show the supply of ecosystem services by different types of ecosystem assets and the use of ecosystem services by economic units. The *SEEA Ecosystem Accounting* provides a reference list of ecosystem services covering provisioning services, regulating and maintenance services and cultural services.

4. Accounting for environmental activities and transactions

35.68 The three accounting themes discussed above (i.e., natural resources, land and ecosystems, and environmental flows) focus on recording different stocks and flows related to natural capital. The fourth accounting theme focuses on identifying transactions, such as environmental taxes and environmental protection expenditure, that are recorded in the integrated framework of national accounts and relate to natural capital. These data are of high relevance in the discussion of environmental sustainability since they provide insight into the responses of economic units to environmental challenges. Many of the transactions concern government activity and regulation concerning natural capital but there is also the potential to record the activities of businesses and households related to production and expenditure for environmental purposes. Across all sectors there is an increased level of economic activity for these purposes and the use of standard frameworks and definitions to record the relevant transactions, including cross-border flows, is of significant

policy and analytical interest, for example in relation to managing responses to climate change.

35.69 The *SEEA Central Framework* describes the range of transactions along with relevant definitions, accounting treatments and classifications. The types of transactions within scope are as follows:

- environmental taxes;
- environmental subsidies and similar transfers;
- transactions related to environmental protection and resource management;
- transactions related to the environmental goods and services sector; and
- transactions related to the use of natural resources including permits, licences and rents.

35.70 While conceptually all of these transactions are within scope of the integrated framework of the SNA, in practice, the major challenges are related to the identification of the relevant transactions, especially in terms of whether a particular transaction has a primary purpose which is environmental, and a consistent classification of the transactions to support comparability over time and across countries. The challenge of identification is heightened in the common situation where the economic unit involved has a primary activity that is not environmentally related. The *UN Classification of Environmental Purposes* provides support to compilers in identifying and consistently recording the relevant transactions. Note that some of these transactions may also be identifiable in other classifications such as *COFOG, Division 5 – Environmental Protection*.

35.71 To support a more structured approach to recording transactions for environmental purposes, the *SEEA Central Framework* describes environmental protection expenditure accounts (EPEA) which provide a series of tables for recording the supply of environmental protection specific services, the expenditures on environmental protection and the financing of these expenditures. The *SEEA Central Framework* also describes a table for the presentation of data on the environmental goods and services sector (EGSS) covering the output of environmental goods and services and associated measures of intermediate consumption, gross value added, remuneration of employees, gross fixed capital formation, exports and labour input.

D. Measuring human capital

35.72 ***Human capital refers to the knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being.*** This definition provides a clear foundation that incorporates both economic and non-economic benefits arising from the use of human capital by individuals. From an economic perspective, the creation of human capital, or put differently, the acquisition of knowledge, skills, competencies and attributes, increases the productive potential of the individuals in an economy and is a source of future economic benefit to them. Critical inputs to the creation of human capital are education and training, but the consumption of these inputs is not sufficient. In addition, creating human capital requires the assembly and processing of these inputs by the individuals consuming them with the result that each individual creates a unique set of capabilities.

35.73 From an SNA perspective, there has been a long-standing discussion on the potential to capitalise education and training expenditures within the integrated framework of national accounts and recognise human capital as an economic asset on the balance sheet. Thus, although human capital has not been included in the integrated framework of national accounts, the discussion here is of high relevance for extending and broadening the integrated framework. The reasons for human capital's exclusion from the integrated framework are presented later in this section.

35.74 This section provides a description of ways in which the integrated framework of national accounts can be connected to additional data on human capital with a strong focus on the conceptual aspects. At the same time, although not described here, there is a substantive body of empirical work that has also been conducted over many years that underpins the conceptual development and demonstrates the feasibility of measuring human capital. One lesson from this empirical work is that due to data availability measurement of human capital is usually limited to a focus on the working-age population in formal employment and undertaking work within the production boundary applied in the integrated framework of the SNA.

35.75 Considering human capital as an economic asset has resulted in the development of two approaches by which human capital may be valued in monetary terms. The first approach is a cost-based approach which sums the costs of generating human capital, principally costs to supply education and training services. To apply this approach, the thematic accounts for education and training described in chapter 34 on Measuring well-being organise the relevant input data. The second approach is the lifetime labour earnings approach which estimates the value of human capital by calculating the present value of future earnings of individuals within an economy. Both of these approaches inherently have a focus on the economic benefits arising from human capital, i.e., the contribution of labour to production within the production boundary applied in the integrated framework of national accounts. While not elaborated here, a broader focus is possible incorporating the contributions of human capital to unpaid household service work, including volunteering, and the non-economic individual and societal benefits of human capital, e.g., in terms of civic engagement and participation.

35.76 The *UNECE Guide on measuring human capital* provides a thorough description of these two approaches and the discussion here summarises the key aspects. From a theoretical point of view, the present value-based approach is the most appropriate, as it incorporates all future economic benefits that can be allocated to the relevant asset, thus replicating a market-equivalent valuation. However, its measurement requires a number of assumptions on the future development of the (active) population and the future pattern of economic benefits. The total values can also be significantly affected by the discount rate that is applied.

35.77 To complement estimates from the present value approach, a cost-based approach can be applied using the perpetual inventory method (PIM). In this approach, the expenditures on creating human capital are summed to obtain an estimate of the value of the human capital. These costs do not only relate to formal education, but should also include training and courses provided by employers, time spent on learning and studying at home, and other expenditures on, for example, school books and other training material. This approach also requires several assumptions, for example on the distinction between expenditures that are current in nature (e.g., maintenance costs) and expenditures which add to the stock of human capital. Assumptions also need to be made concerning the service lives and the depreciation pattern of human capital. Measurement must also consider methods for measuring and valuing inputs from unpaid household service activities (e.g., concerning childcare), for dealing with flows of migrants, and for determining appropriate products and price indexes for the derivation of volume measures. In practice, both approaches yield different results and further understanding of the differences is required.

35.78 Table 35.2 provides a structure for presenting data on human capital and related variables.

Table 35.2: Summary human capital table

	Labour input by ISIC	**Hours worked** by ISIC	**Remuneration of employees** by ISIC	**Human capital - Lifetime labour earnings** by ISIC	**Human capital - Cost-based PIM** by ISIC
	Number people employed	Hours	Monetary	Monetary	Monetary
Total					
By individual characteristic					
Age					
Sex					
Educational attainment					

35.79 In applying both approaches there are a number of measurement challenges which must be considered by compilers:

- The development of human capital takes place over a long but varying length of time, and indeed, potentially over a life time, which complicates the determination of the timing of the capital formation (and the contribution of individual years).
- The development of human capital relates to the input of education and training provided by other economic units but will also be built through personal experiences and unpaid inputs (unpaid household service work) of family and friends.
- The use of human capital in production is limited by the amount of time that a person provides labour input but the precise pattern of that use varies over time and hence the way in which human capital depreciates needs to be considered. The variation in the pattern of use will also affect the determination of asset lives.
- Human capital should be considered as a combination of skills and knowledge about different topics and each of these may have different development and use profiles and asset lives.
- Depending on wider economic and social conditions, certain skills and knowledge may become obsolete from an economic perspective, for example through changes in technology.
- There is a very large heterogeneity in individual's combination of skills and experience and how these align to particular occupations and industries.
- The quality of educational experiences and the impact of education on the development of human capital varies across individuals and may not be directly related to the expenditures on education, either in current prices or in volume terms.
- There are additional economic benefits (known as spillover effects) when knowledge and experience is shared among employees in a workplace and more broadly through society, which in turn challenges the ability to use the sum of measures of human capital of individuals to reflect the aggregate contribution of human capital.

35.80 Given these challenges, the primary issue for compilation is the extent to which appropriate assumptions can be determined to provide reasonable estimates of human capital to support discussion and analysis. In this context, while the focus of discussion here is on the estimation of a monetary value of human capital, it is essential to collect a substantial range of non-monetary data to support measurement and the testing of assumptions. Relevant non-monetary data include data on years of education, the number of people in different professions, and the levels of skills and experience. In that regard, accounting for human capital provides a framework for the organisation of an array of data building on the labour market tables (see chapter 16 on Labour) and the thematic accounts for education and training (see chapter 34 on Measuring well-being).

35.81 While there are challenges in the measurement of human capital and ongoing research is encouraged, these practical concerns are not the primary reason for the exclusion of human capital from the integrated framework of the SNA. One long-standing conceptual concern is that although the treatment of expenditure on education and training as analogous to gross fixed capital formation is possible, the nature of the acquisition of the (economic) benefits of education and training is such that they are activities that cannot be undertaken by anyone else on behalf of the student. Thus, the acquisition of knowledge is not a process of production in and of itself, even though the instruction conveyed by education services is. The consequence is that human capital cannot be considered produced. The more recent investigation into knowledge products and the capitalization of intangibles suggests that this concern about whether human capital can be produced merits further investigation.

35.82 Another conceptual concern has been the question of ownership rights and the extent to which human capital is capable of bringing economic benefits to its owner, as required to satisfy the definition of economic assets. Since ownership is often connected with expenditures, such a framing may be evident in the situation where firms undertake expenditure to train and develop the skills of their employees. In such cases the firms will be the owners of the human capital that is created since they will be accruing the associated economic benefits. Unfortunately, this framing connects the question of ownership of human capital to the problematic idea that people are "owned". An alternative framing is that human capital is embodied in individuals who

in effect own their skills, knowledge and experience and utilise these capabilities to secure future economic benefits for themselves. Again, there is merit in further investigation of these different perspectives, recognising as well that the accounting implications of each perspective are varied.

35.83 Notwithstanding these specific conceptual concerns, it must be recognized that establishing human capital as an asset within the integrated framework of national accounts would have substantial implications for the structure of the accounts and the interpretation of traditional measures of income, consumption, investment and saving, especially for the household sector but also more broadly. Resolving these implications requires determining the appropriate accounting entries to show that those paying for the development of human capital (e.g., governments, corporations) transfer the accumulation of benefits to the individuals whose human capital is enhanced. In part this may involve consideration of social transfers in kind related to education. The interpretation of remuneration of employees also needs consideration since in a human capital framing this flow could be represented as a payment for capital services to the owner of the human capital. While accounting solutions to these types of changes have been developed (see the *UNECE Guide on measuring human capital*), a wider discussion is required of the potential changes to the integrated framework of national accounts and the implications for key economic measures and their interpretation.

35.84 Finally, the measurement of human capital allows for connection to a range of other topics that are important for individual human capital accumulation. These include health, parental and family engagement, cultural and social engagement and wider work-related human capital accumulation beyond in-work training.

35.85 Health is a key aspect of an individual's human capital. This includes, for example, the effect of the lack of various diseases, illnesses and disabilities providing a higher level of physical and cognitive skills directly, as well as enabling further development into the future. Conversely, lack of good health can be seen as an impairment of an individual's opportunity to develop, while also having a detrimental impact on an individual's human capital today. Better health can also support the longer use of an individual's human capital, whether in the marketplace or in wider economic activity.

35.86 Similarly, people's family situation, and the cultural and social activities people engage in both as children and adults (e.g., attending museums, participating in social clubs, undertaking personal projects) are known to influence people's cognitive, physical, social and emotional development. While all of these factors will influence the development of people's human capital, the mechanisms by which this occurs is an area of active research (e.g., determining the relative role of parental income versus the opportunities such income provides). In addition, incorporating these issues within either an income-based or cost-based approach requires further discussion both in terms of valuation concepts and regarding data sources to support international comparability.

35.87 Lastly, beyond the wider social aspects feeding into human capital investment, it is known that there are other mechanisms that influence a person's development in the workplace. In particular, support networks, mentorship opportunities, and the quality and quantity of feedback on a person's work allow them to improve their skills and knowledge, and hence their potential human capital. There are also aspects of the extent to which employees are encouraged in their work, while also being supported, so that they are able to improve their marginal productivity. All of these concepts are clearly important in the aggregate, but due to measurement issues, such as how to convert such opportunities as intangible "investment" when there is no market transaction, and what the imputed transaction may need to be, mean this is still an active research area.

35.88 Collectively, all of the issues introduced in the paragraphs above describe a large research agenda. Thus, notwithstanding the significant progress on accounting for human capital that provides a strong foundation for measurement, there remain many areas in which additional investigation and testing should be undertaken to more fully harmonise and integrate the accounting required for the development and contribution of people's knowledge, skills and experience.

E. Measuring social capital

35.89 The concept of social capital can be understood and expressed in a number of different ways and applying different theoretical perspectives. For the purposes of discussion here, ***social capital (AN7X) refers to the social norms, shared values and institutional arrangements that foster co-operation within or among***

groups (*OECD, 2001*). Given the variety of norms, values and institutional arrangements, it is not surprising that social capital can be measured in a range of ways and researchers have highlighted social capital's influence at the level of individuals, at the level of social networks and at the level of institutions.

35.90 Drawing from the research by the *Conference of European Statisticians (CES) on measuring sustainable development (UNECE, 2015)*, social capital can influence well-being through three primary channels:

i. Direct well-being effects on individuals who are part of social networks. From a well-being perspective, it is important to include in the measurement of social capital those networks that aim to connect different groups in society as these networks can be expected to generate high levels of generalised trust and may have the highest impact on the well-being of society as a whole. Through this channel there will be close connections to the role of human capital and delineating the contributions of each capital will be important for accounting purposes.

ii. Generation of increases in other types of capital. This may occur for example in the context of human capital where social networks facilitate job searches and reduce unemployment or in the context of education where supportive parents and communities can drive better education outcomes for students. In the context of economic capital, social networks can support innovation and the general creation and diffusion of knowledge. In the context of natural capital, social networks can build and change social norms and values with respect to the environment and the restoration of stocks of natural capital.

iii. Through networks, increases in social capital can improve efficiency in the use of other capitals and in production processes generally and hence can support reductions in transaction costs. This effect will be driven not only through the number of networks but also by the levels of trust that are built up within networks. Higher levels of generalised trust can provide informal checks on processes and transactions and facilitate higher levels of social and economic interaction. At a macro-scale this effect can be seen in terms of the extent to which there are harmonious relationships between government and society.

35.91 Currently, recommendations on the measurement of social capital are mainly focused on generating indicators expressed in physical units. The *CES* recommends five indicators: two concerning the theme of trust – generalized trust (i.e., the quality and quantity of social relationships) and bridging social capital (i.e., the trust between groups in society); and three concerning the theme of institutions – voter turnout, the percentage of women in parliament and the contribution to international institutions. Research in a range of contexts is ongoing to further develop metrics in this area and the integration of this research within a general multiple capitals framing is important given the range of connections across the capitals that are evident. In many contexts, it may be that investments in social capital provide a cost-effective means of securing well-being outcomes via its influence on the condition of the stocks of other capitals.

35.92 Techniques to express the value of social capital in monetary terms have not yet been widely developed and consideration is needed as to whether this is a required objective. Recognising that the assessment of sustainability requires a strong basis in data on the quantity and condition of capital stocks, a relevant near-term measurement objective is likely to involve a focus on physical measures and establishing agreed definitions and interpretations of social capital within the official statistical community as well as the wider sustainability and well-being community.

F. Considerations in measuring sustainability

35.93 The measurement of the different types of capital and all of the more detailed components is a significant undertaking. The integrated framework of the SNA provides key definitions and treatments for all types of economic capital and some components of natural capital, but for compilation purposes additional guidance should be consulted and a range of handbooks and other materials have been prepared to provide this support. These include guidance on the measurement of the capital stock (of produced non-financial assets) (OECD Manual on measuring capital, 2nd edition), and guidance on the measurement of land (*Eurostat-OECD Compilation guide on land estimations*). With respect to natural capital, there are *SEEA* based handbooks for individual natural resources such as timber, fish and mineral and energy resources, while guidance on the compilation of natural resources in the integrated framework of national accounts is provided in *Measuring*

natural resources in the national accounts: a compilation guide (forthcoming).

35.94 This section highlights a small number of general measurement considerations that can arise in the measurement of stocks and flows of capitals. A general message is that all measures of capitals should be well documented to explain clearly the measurement scope and all relevant assumptions. These considerations are relevant in relation to measurement of the integrated framework of national accounts and to measurement of capitals beyond the integrated framework. As well, the discussion in the following sections aims to highlight the range of opportunities, connections and contributions that national accounts compilers can make to the assessment of sustainability more generally.

1. Links to measurement of adjusted economic aggregates and extended accounts

35.95 As elaborated in chapter 2 on National accounts and its contribution to measuring well-being and sustainability, the integrated framework of the SNA incorporates a range of net measures which adjust for the costs of depreciating and depleting economic and natural capital. These net measures include net domestic product, net national income and net household saving. Furthermore, monetary values in balance sheets are recorded at their depreciated or depleted values. The concepts of depreciation and depletion can also be applied to capitals outside the scope of the integrated framework of national accounts and hence it is possible to extend the scope of net measures to recognise other costs of capital and present these adjustments in extended income accounts and balance sheets. The economic theory for these extensions is developed in the literature on wealth accounting and estimates of national wealth and indicators that adjust for the various costs of capital based on this theory are regularly published, for example by the World Bank and the United Nations Environment Program (see chapter 2, box 2.1).

35.96 The *SEEA Ecosystem Accounting*, chapter 11, describes the potential to extend the integrated framework of national accounts with monetary values of ecosystem services (thus extending the production boundary applied in the integrated framework) and associated monetary values of ecosystem assets and changes in the value of those assets reflected in measures of enhancement and degradation. There are a number of challenges in undertaking monetary valuation of ecosystem services and assets, including aligning the values of ecosystem assets with the value of land as an economic asset and determining an appropriate allocation of values to institutional sectors in cases where the beneficiaries are not the owners or managers of an ecosystem, for example where the benefits of water purification services supplied by forest ecosystems benefit many households living downstream. These challenges are considered further in sections F.2 and F.4 below.

35.97 A separate accounting application related to the measurement of environmental flows is the compilation of input-output tables which incorporate additional rows alongside the standard set of products. The additional rows, which concern things like water use, energy use, greenhouse gas emissions, material flows and ecosystem services, may be recorded in monetary or physical terms. These environmentally extended input-output tables are likely to be of significant relevance in the development of extended economic models aimed at assessing the implications of alternative climate and nature related policies. *SEEA Applications and Extensions* provides an introduction to environmentally extended input-output tables.

2. Valuation of natural capital

35.98 The measurement of economic assets in the context of the balance sheet within the integrated framework of national accounts has a focus on monetary valuation of the relevant stocks. For this purpose, the SNA has established relevant valuation concepts and principles that are described in chapter 4 on Flows, stocks and accounting rules. For the measurement of those assets that do not have an observed market price at the balance sheet date, the integrated framework of the SNA proposes two measurement approaches: (i) written down replacement cost (often estimated using the perpetual inventory method (PIM)), and (ii) present value of future economic benefits. The first approach is commonly used in estimating the values of produced non-financial assets where the purchase price is observed but the current market value of the depreciated asset is not, while the second approach is most commonly used in estimating the monetary values of non-produced natural resources.

35.99 To estimate monetary values for those capitals outside the integrated framework of national accounts, a range of methods and valuation concepts have been applied. The internationally recognised statistical principles and recommendations for monetary valuation described in chapters 8 to 11 of the *SEEA Ecosystem Accounting* use the same value concept – exchange values – as used in the integrated framework of the SNA, to support the potential of extending the estimates in the integrated framework by incorporating the values of ecosystem services. The use of the exchange value concept supports the measurement of levels as required for national accounting purposes, and inherently incorporates both price and quantity components. In turn this supports the measurement of changes in volume terms as needed for the assessment of sustainability (see discussion in the introduction to this chapter).

35.100 In a similar way to the valuation of natural resources, the valuation of ecosystem assets is undertaken using the present value approach based on expected future benefits from ecosystem services estimated at their exchange values. *SEEA Ecosystem Accounting* provides a discussion on a range of considerations concerning the implementation of this valuation approach.

35.101 While the approach outlined in the *SEEA Ecosystem Accounting* does provide monetary values for natural capital beyond the integrated framework of the SNA, the values do not capture the full range of ecosystem services and related benefits that may be attributed to ecosystems and, more broadly, any monetary value of natural capital will not reflect the complete set of values that can be attributed to natural capital. It is beyond the scope of this chapter to provide a complete discussion of this issue but the following points are highlighted. (See section 2.4 of *SEEA Ecosystem Accounting* for a longer discussion of these issues.)

35.102 Firstly, in applying the concept of exchange value, the integrated framework of the SNA and the *SEEA* limit the scope of measurement to what are commonly called "use" or "instrumental" values, i.e., those values derived by people and economic units from natural capital through the direct or indirect use of natural capital in production or consumption, noting that use does not necessarily imply extraction of goods from the environment.

35.103 Secondly, in the economic valuation of natural capital, many economists also consider the role of non-use values which people associate with natural capital. Non-use values are commonly separated into two main types: (i) existence values where the value is based on knowledge that the ecosystem is present now; and (ii) bequest values where the value is based on making sure that the ecosystem is available to future generations. Also recognised in some cases are option values that concern the potential for an ecosystem to provide use values in the future.

35.104 Thirdly, concerning non-economic values, other research on the value of natural capital has considered intrinsic values (i.e., values that are inherent to the asset and independent of any human experience or evaluation) and relational values (i.e., values that are relative to the meaningfulness of relationships between individuals and the environment). Both of these types of value are likely to be relevant considerations in decision making but cannot be measured directly in monetary terms. However, they may be observed indirectly, for example, a person with high intrinsic value for an ecosystem might donate or may spend time volunteering with conservation organisations. Overall, the organisation of data concerning the extent and condition of ecosystems and data on related expenditure or time-use can support the assessment of these non-economic values.

35.105 Fourthly, it should be recognised that for any given stock of natural capital, it is most likely that different stakeholders will hold different combinations of the values just described (i.e., there are multiple value perspectives). Some of these perspectives may be able to be expressed in monetary terms but, as just noted, some may not. In this context, the role of statistics and accounting is not to provide a single measure or value but to organise a coherent set of complementary information that allows decision making processes to function as efficiently as possible.

3. Weak and strong sustainability

35.106 A focus on the measurement of the stocks of capitals can support different perspectives and interpretations of sustainability. As noted in the introduction, in economic theory, the sustainability of past developments is implied if the level of wealth in volume terms is non-declining. Ideally, the measurement of past trends in wealth would be calculated at a relatively detailed level for specific asset types (i.e., below the level of

economic, natural, human and social capital). Since the relative prices of each asset type would change over time, it is expected that there will be substitution between asset types that would then be revealed in the measurements in both physical and monetary terms. Based on these trends in substitution and other information, such as limits on the availability of stocks of each asset type, projections may be made about future flows of benefits from the stocks as part of assessment about future prospects for sustainability and well-being.

35.107 In this framing, the concept of weak sustainability, assumes a situation where all types of capital (and all more detailed asset types) are perfect substitutes, a situation which is highly unlikely to occur. Importantly, the measurement of relative prices and changes in the volume of wealth does not need to make an assumption of weak sustainability a priori. Conversely, the concept of strong sustainability assumes that no substitution is appropriate, which again is a situation which is unlikely to be revealed in measurement of past trends. However, in making projections about future trends, it may be of interest to identify specific types of capital which should not be lost. With respect to natural capital, the concept of critical natural capital has been used to this end, i.e., identifying those stocks of natural capital on which society has a critical level of dependence. The development of projections for the volume of wealth based on maintaining certain capital stocks and comparing these projections to the subsequent trends may be of significant policy and analytical interest.

4. Aligning economic benefits and ownership

35.108 In defining assets, the integrated framework of the SNA makes a direct link between economic ownership, including collective ownership, and the future economic benefits that are attributable to that asset. Consistently, costs associated with the use of an asset, including its depreciation or depletion, are attributed to both the user of the asset and the economic owner (or owners in the case of applying the split-asset approach where the economic benefits from a single resource are shared (see chapter 27 on Contracts, leases, licenses and permits)).

35.109 This standard national accounting approach provides a complete structure for the organisation of relevant information. It can also be extended to incorporate additional types of assets (such as ecosystem assets and human capital) and additional flows (such as ecosystem services). However, for some types of economic analysis, the attribution of economic benefits and costs only to economic owners is not appropriate and alternative presentations of data are relevant. Two examples highlight the potential for alternative presentations. Firstly, consider the supply of collective services by public infrastructure (such as roads) to transport firms and households. In this case the economic benefits from the infrastructure do not only accrue to economic owner, generally general government, but also to the economic units making use of the infrastructure.

35.110 Second, the stock of some assets may decline in quality and have reduced capacity to supply services for reasons other than use in production by an economic owner. For example, water bodies used for water supply may be degraded as a result of excess nitrogen use in agricultural activities; and human health may be damaged by air pollution thus reducing the productivity of human capital. Consequently, there is a loss of benefits (or increased costs) to the economic owner that is not related to the use of the asset by that owner, but due to the activity of another economic unit.

35.111 In both of these examples, there is often interest in developing alternative allocations and presentations of the flows of benefits and the costs of degradation or capital loss such that the connections of different economic units to the assets are revealed. For example, in the second case above, the loss of benefit to the water supply company from damage to the water body might be attributed as a cost of production to the agricultural activity whose excess use of nitrogen is causing the damage. This general area of economic analysis concerns the assessment of externalities. Discussion on the links between accounting and the analysis of externalities is presented in chapter 2 on National accounts and its contribution to measuring well-being and sustainability and chapter 4 on Flows, stocks and accounting rules, and in *SEEA Ecosystem Accounting*, chapter 12.

35.112 Although standard accounting-based approaches do not provide results that reflect these alternative presentations, the data organised using accounting structures, especially when it is extended to capture a more complete set of data on multiple capitals and non-market benefits, provides a well-structured information set

to support such analysis. Further, externality analysis will require a baseline set of information and also a counterfactual or alternative scenario for the purposes of comparison. As for the assessment of sustainability just noted above, accounting-based approaches can provide the baseline information set for use across multiple analyses.

35.113 It may well be the case that the requirements for the analysis of externalities is more local or project specific in nature in which case a set of national accounts may be too coarse but, in theory, the same accounting rules can be applied at all levels of granularity subject to the availability of data and resources.

5. Links to the assessment of capacity, resilience and risk

35.114 The assessment of sustainability is often discussed in the context of other systems related concepts such as capacity, resilience and risk, which can all be linked to the discussion of ensuring well-being is sustained in the future. The assessment of all of these concepts is related in the sense that they require consideration of the future and the projection of potential changes to the stocks of capital. Most assessments rely on using a baseline set of information about past trends and current levels of relevant stocks and flows. With a baseline in place, alternative scenarios and projections involving different assumptions can be made to complete assessments of sustainability, capacity, resilience and risk.

35.115 Accounting-based approaches that bring together information in a structured way and which cover multiple capitals provide an excellent structure for the required baseline information. Indeed, the use of a common baseline across different assessments can enhance the usefulness of assessments for decision makers since the differences across assessments can be more readily compared. This use of accounting-based approaches has been common practice in economic and financial modelling for many decades but its application in sustainability and related discussions has not yet been well-developed or widely adopted.

35.116 In addition to providing baseline information, accounting-based approaches support the use of a common framing for the formulation of alternative scenarios and assumptions. In particular, the use of a capitals framing facilitates organisation of complementary data on relevant thresholds for the stocks of capitals, for example data on relevant biophysical limits (e.g., with respect to water quality) can be presented alongside accounting information on the current condition of ecosystem assets. In this example this complementary data would allow identification of those ecosystem assets that are close to physical limits.

35.117 With respect to the assessment of risk in particular, a common starting point is understanding physical risks, for example due to the effects of climate change on agricultural production. From this starting point, the assessment of associated financial risks to companies and to the wider economy can be evaluated. The use of accounting-based approaches that present both physical and monetary data and that are designed to be integrated with standard economic data and models can provide a robust basis for these assessments. In particular, accounting-based approaches can be applied at local and landscape scales on a consistent basis thus allowing context specific information to be utilised which will generally be of importance in the assessment of risks concerning environmental and social factors, for example human health.

6. Assessing financial sustainability and stability

35.118 While the main focus in the discussion of sustainability in this chapter has been on natural and human capital, the same general principles of assessing sustainability can be applied to types of economic capital. Of specific relevance in some contexts are financial assets and liabilities and the extent to which there are imbalances within financial systems (financial stability) that might highlight concerns about the sustainability of the financial system. As well, the financial system will have connections to other types of capital, for example in relation to the potential of demographic changes and climate change affecting government finances and banking and insurance systems. The financial accounts within the SNA sequence of economic accounts contain a rigorous framework to provide baseline information describing the financial system and amongst others chapter 29 on Financial corporations and chapter 37 on From-whom-to-whom tables and related financial indicators discuss how the integrated framework of the SNA can be used in the analysis of financial sustainability.

35.119 As introduced above, a related area of work is the assessment of enterprises' exposure to environmental risks,

including climate risks and risks emerging from declines in nature and biodiversity. This work extends from assessing the physical risks to quantifying the financial risks to corporations, including through their supply chains. Accounting-based data sets can be applied to support these assessments through the provision of baseline information. Two avenues of support can be envisaged. Firstly through national and landscape scale public data presenting industry benchmarks and changes in the wider context for each enterprise's operations (e.g., water scarcity, workforce skills) and secondly, through enterprises using accounting-based approaches to organise similar data for their own operations (e.g., on water use, greenhouse gas (GHG) emissions, workforce capability). These micro-macro connections are quite well-established for economic and financial data and are now developing in the environmental and social contexts often in the context of requirements for corporate reporting on sustainability. Examples of this include the requirements for GHG emissions reporting in the European Corporate Sustainability Reporting Directive and the Securities and Exchange Commission. These reporting requirements have been developed from initial work from the Financial Stability Board who developed the recommendations on climate-related disclosures and is extending to recommendations on nature-related disclosures. Ongoing research into the role of the SNA, the *SEEA* and other accounting frameworks to support work in corporate reporting on sustainability is required, together with work on appropriate data collection vehicles.

7. Supporting the measurement of sustainable finance

35.120 Another related but separate area of measurement concerns "sustainable" finance, which considers the financing activities that are considered to be contributing to the achievement of more sustainable outcomes. Thus, alongside the increasing range of activity and policy response to the challenges of sustainability, there is increasing level of financing of these activities. While the financial instruments (e.g., loans, debt securities, equity and investment fund shares/units) that are used to provide resources are the same as those used for other purposes, separate quantification of the level of financing for sustainability purposes, for example measures of the value of green bonds, is important for tracking investment in the green and climate/transition economy and informing decisions on monetary and fiscal incentives relating to it (see *Developing Sustainable Finance Definitions and Taxonomies)*.

35.121 The measurement of sustainable finance requires determining which components of the different financial instruments should be considered sustainable. This is an active area of research and discussion in many fora across both the private and public sector. Nonetheless, recognising the policy relevance of the data, definitions have been determined in order to operationalise the concept of sustainable finance. These definitions should be reviewed in the light of further advances, especially in the context of changes in the regulatory and reporting requirements.

35.122 Two primary types of sustainable finance are defined: ESG (Environmental, Social, Governance) finance and green finance with green finance being a sub-set of ESG finance. ***ESG finance is finance for activities or projects that sustain or improve the condition of the environment or society or governance practices. Green finance is finance for activities or projects that sustain or improve the condition of the environment.*** The general principle for establishing greenness is positive contribution to the environment, rather than "do no harm".

35.123 Countries are encouraged to compile supplementary measures of ESG finance and green finance as "of which" items for the following financial instruments: debt securities (AF3), loans (AF4), equity (AF51) and investment fund shares/units (AF52). The relevant breakdowns are shown in table 35.3 below. The definitions of each of instruments are slight adaptations of the general definitions above. Thus, for ESG debt securities the scope concerns those where the use of proceeds is restricted to financing or refinancing activities or projects that improve the condition of the environment or society or governance practices, or where the issuer agrees to achieve performance objectives that improve the condition of the environment or society or governance practices. For ESG loans the scope concerns those in which 50% or more of the debtor's activities improve the condition of the environment or society or governance practices. In the case of business loans, the debtor's activities would be reflected in the business's revenue, while in the case of loans to households, they would depend on the use of the loan proceeds. For ESG equity the scope concerns those equity investments by investors in institutional units in which 50% or more of the institutional unit's revenue comes from activities that improve the condition of the environment or society or governance practices. For ESG investment fund shares/units the scope concerns shares or units in investment funds investing in financial

instruments, companies, projects or other funds that intend to achieve performance objectives that improve the condition of the environment or society or governance practices. The definitions concerning green instruments have the same measurement scope except that they are limited to improving the condition of the environment.

35.124 Focus should be placed on recording the stock values for these financial instruments (as "of which" items in the balance sheets), with transactions being recorded as a second order of priority (as "of which" items in the financial accounts). If possible, the estimates should be provided for all of the main sectors and subsectors. For debt securities, total ESG debt securities may be further broken down to identify the following "of which" items:

- social debt securities which concern debt securities where the use of proceeds is restricted to financing or refinancing activities or projects that improve the condition of society;
- green debt securities which concern debt securities where the use of proceeds is restricted to financing or refinancing activities or projects that improve the condition of the environment;
- sustainability debt securities which concern debt securities where the use of proceeds is restricted to financing or refinancing activities or projects that improve the condition of the environment and society;
- sustainability-linked debt securities which concern debt securities in which certain characteristics, such as the associated cash flows, are linked to achieving performance objectives that improve the condition of the environment and/or society; and
- other ESG debt securities which include all ESG debt securities other than social, green, sustainability and sustainability-linked debt securities.

Table 35.3 Reporting structure for ESG and green financial instruments

AF.3	Debt securities
	Of which: ESG debt securities (AF3ow1)
	Of which: Social debt securities (AF3ow11)
	Of which: Green debt securities (AF3ow12)
	Of which: Sustainability debt securities (AF3ow13)
	Of which: Sustainability-linked debt securities (AF3ow14)
	Of which: Other ESG debt securities (AF3ow19)
AF.4	Loans
	Of which: ESG loans (AF4ow1)
	Of which: Green loans (AF4ow12)
AF.5	Equity and investment fund shares/units
AF.51	Equity
	Of which: ESG equity (AF51ow1)
	Of which: Green equity (AF51ow12)
AF.52	Investment fund shares/units
	Of which: ESG investment fund shares/units (AF52ow1)
	Of which: Green investment fund shares/units (AF52ow12)

35.125 There is a range of measurement challenges in implementing these recommendations that are addressed in associated guidance material. A principal challenge is effectively determining whether the purpose of a given financial instrument satisfies the definition of sustainable finance. This may be determined by the label placed on the financial instrument and the certification approach. The following approaches are acceptable: (i) self-labelling, where the issuing unit decides on the ESG or green classification; (ii) Second Party Opinion (SPO), where a trusted unit provides the ESG or green label; and (iii) certification, where, in the presence of standards (public or private), a specialised unit grants the ESG or green status. A combination of approaches, potentially country specific, will need to be adopted. To combat concerns about "greenwashing", it is important to provide metadata indicating the levels of assurance provided (through labelling and certification) that the estimates are ESG or green.

35.126 To support assessments of the effectiveness of sustainable finance, it is relevant to present data on the levels of investment in ESG and green activities (as just defined) alongside data about the outcomes arising from that activity, accepting that precise links may be difficult to identify. A particular focus for green finance may be reporting on the extent and condition of the natural capital stocks which the investments aim to improve. For example, for green debt securities measures of changes in the extent and condition of mangroves that have been the focus for the use of the funds would be relevant as part of understanding whether the planned activities (and the associated finance) are making a contribution to environmental outcomes. At a macro and landscape scale, data on stocks of capital and changes over time will support the identification of locations where sustainable finance may be best targeted.

35.127 Consistent with these recommendations, *BPM7* also encourages countries to compile measures of ESG and green finance, for the international investment position (IIP) (stocks) and balance of payments (BOP) (flows) as "of which" categories of debt securities, loans, equity and investment fund shares/units, as supplementary items outside the standard components. *BPM7* also suggests compilation of other environmental indicators including the physical location of investments, foreign direct investments in specific sectors as well as climate-related international cooperation grants to low-income countries *(BPM7,* Annex 10*).*

8. Accounting for areas beyond national jurisdiction

35.128 In the measurement of natural capital, the accounts of the integrated framework of the SNA and the *SEEA* are usually compiled for countries and hence the geographic scope is limited to the economic territory of a country including its Exclusive Economic Zone (EEZ). While this scope covers a reasonably large share of the world's natural capital, there is a significant amount of natural capital, in particular concerning oceans, that may be excluded. This includes natural resources such as fish stocks and seabed mineral resources and the ecosystem services provided by oceans such as those related to global climate regulation, noting that if economic ownership can be established for natural resources, for instance via internationally agreed quotas, these resources are within scope of the integrated framework of national accounts.

35.129 Where there is interest in organising data about these types of natural capital outside of the scope of the integrated framework of the SNA in a manner that can be directly related to country based measures, the accounting definitions and treatments of the integrated framework of the SNA and the *SEEA* can be applied. For example, it would be possible, conceptually, to compile accounts for the natural capital of the Pacific Ocean. A similar logic could be applied to develop accounts for the atmosphere on a more holistic basis.

Chapter 36: Input-output tables

A. Introduction

36.1 The purpose of this chapter is to build on the presentation of the supply and use tables in chapter 15 to examine in greater detail the possibilities offered by using a tabular and/or matrix form of presentation of the accounts. As has been noted on a number of occasions, the SNA is intended to offer a degree of flexibility in implementation as long as the inherent accounting rules are observed. The fact that the requirement to balance expenditures and revenues is immediately obvious within a matrix framework makes this a powerful way in which to explore different options while still ensuring the balances are satisfied. One aim of this chapter is to demonstrate the power of a matrix presentation in this way.

36.2 A second aim is to describe the basic ideas of input-output tables. Supply and use tables are an integral part of the integrated framework of the SNA and the process of compiling these tables is a powerful way of ensuring consistency between the various data sources available to the compiler. For many analytical purposes, though, a transformation from a pair of supply and use tables into a single input-output table where row and column totals are equal brings very considerable advantages. Input-output tables cannot be compiled without passing through the supply and use stage (except under very restrictive assumptions). They are therefore analytical constructs that inevitably involve some degree of modelling and assumptions in their compilation.

36.3 Similar to supply and use tables covered in chapter 15, the role and use of input-output tables has also expanded significantly over the past two decades. The input-output tables provide a powerful feedback loop in terms of quality and coherence of the supply and use tables both in current prices and in volume terms. This chapter not only covers the derivation of national input-output tables but also the multi-country input-output tables which form key inputs to analyses and indicators concerning, for example, global value chains, and trade in value added, which are discussed in chapter 23 on Globalization, and environmental footprints.

36.4 There is a vast literature on the compilation and use of national input-output tables and it is impossible in a short chapter to give a full appreciation of the range of complexities of compilation and inventiveness of applications. Likewise various international organisations and research consortia have developed multi-country databases, and in turn, multi-country input-output tables. The chapter aims only to give a feel for the sort of operations necessary to transform national supply and use tables into national input-output tables as well as compilation of multi-country input-output tables. The *UN Handbook on Supply and Use Tables and Input-Output Tables with Extensions and Applications* provides more detail and covers a wide-range of implementation issues. Furthermore, the website of the International Input-Output Association (www.iioa.org) is a good places to start a more detailed investigation of the potential in this field.

36.5 Chapter 15 on Supply and use tables describes how they may be used in order to ensure the internal consistency of disparate data sets. Section B of this chapter looks at two particular aspects of the supply and use tables where it may be useful to adopt a different approach to that described in chapter 15. The first of these concerns the treatment of insurance and freight on imported goods and the second concerns the treatment of goods that are processed by a unit that is not the legal owner of them. Section B also discusses how information cross-classified by establishment and industry can be transformed into information relating to institutional sectors. Section C is concerned with how a pair of supply and use tables may be transformed into a single input-output table. Each of the supply and use tables shows disaggregation by products and industries. In an input-output table, one of these dimensions is eliminated. Thus a single table may show the relationship between the supply and use of products or alternatively the output of industries and the demand for the output of industries. Finally, section D covers multi-country input-output tables and the derivation and challenges involved.

B. Flexibility in the supply and use tables

1. The treatment of margins on imports

36.6 In discussing valuation in section C of chapter 15 on Supply and use tables, consideration is given to how transport margins should be incorporated into the accounts and in particular how international transport charges should be recorded. Paragraphs 15.68 to 15.88 explain that the parallel between basic and producer prices does not carry forward simply to a distinction between CIF and FOB-based prices. The distinction depends on whether it is the unit providing the goods or the unit taking delivery of the goods that is responsible for providing the transport and insurance. Paragraph 15.88 ends by discussing briefly the practical problems in deriving the desired valuation from the available data sources. It is reproduced here for convenience.

36.7 It may not be possible to determine from customs declarations which unit is responsible for the transport costs and, even when it is and conceptually the transport costs should be separated from the value of the goods themselves, there may be no information and no resources available to make the separation in practice. In such a case the CIF value of imports may be the only source with a disaggregation by type of good. If the disaggregated CIF figures are used for imports of goods, though, that part of the transport costs and insurance also included in imports of services would be double-counted. In order to avoid this, therefore, an adjustment column is inserted into the supply table. The adjustment column consists of a deduction from the services items for transport and insurance equal to the CIF-to-FOB adjustment for these items with an offsetting global adjustment made to imports of goods. Table 15.4, reproduced here as table 36.1, gives an example of such an adjustment.

36.8 This adjustment column shows the reallocation of service margins from the industries where they are produced (by resident or non-resident producers) to an adjustment row for the CIF/FOB adjustment. In the column for goods, the values given industry by industry include an element of these service margins but this is deducted on the CIF/FOB adjustment row to leave the total equal to the total of imports FOB. The adjustments in this column are analogous to a similar column that could be shown illustrating the adjustment between purchasers' and basic prices.

36.9 A simpler procedure than that just described, though one not strictly consistent with *BPM7* recommendations, is to ignore the balance of payments division between goods and services and adjust the figures for imports of services by the amount of services provided by non-residents that are included in the detailed figures for imports of goods. This ensures that the total of imports of goods and services agrees with the total in the balance of payments but will not agree with the total of imports of goods on a FOB basis and of services shown there. This makes compiling the supply and use tables simpler but means that it is not possible to use imports of goods on a FOB basis to match exports of those goods from other countries. Even in this simpler version, however, the amount of freight and insurance on imports provided by residents must be shown as an export of services.

36.10 In this respect, it is important to note, as described in paragraph 15.89, that the valuation of imports and exports in relation to using CIF and FOB is likely to change to invoice values in the next update of the macroeconomic statistical standards.

Table 36.1: An example of imports entries in the supply table with the global CIF to FOB adjustment

	Imports of goods	Imports of services			Total imports
Product groups	CIF based *detailed* goods	FOB based *detailed* services (BOP data)	Adjustment of services to SUTs basis	CIF based *detailed* services (SUTs basis)	
	1	2	3	4	5
1 Agriculture	37				37
2 Mining, etc.	61				61
3 Manufacturing	284				284
4 Construction					
5 Trade etc.		62	-6	56	56
6 Finance and insurance		17	-4	13	13
7 Real estate, etc.					
8 Business, etc.		5		5	5
9 Community, etc.					
10 Other services					
11 Public administration					
Total, CIF-based	**382**	84	-10	**74**	**456** (=1+4)
CIF/FOB adjustment	**-10**			**+10**	0
Total, FOB-based	**372**	**84**		84	**456** (=1+2)
Purchases abroad by residents	20	23		23	43
Total	392	107		107	499

2. Goods processed by a unit not assuming economic ownership

36.11 A producer may carry out the same activity under quite different economic conditions. Consider farmers growing grain which is milled into flour before use. Suppose one farmer acquires a mill to process his own grain but once this is acquired he may offer to mill grain for others for a fee. The production account for the farmer with a mill will look somewhat different from that for a farmer who does not have a mill but pays the first farmer a fee for milling even though both produce flour for sale.

36.12 In the case of milling the reasons for sub-contracting the activity to another may be the availability of suitable fixed capital. Increasingly, however, similar processes are being carried out internationally and in respect of activities more usually associated with manufacturing such as the assembling of component parts. Here the motivation is less one of the availability of capital than of the costs of labour. If the average wages in country X are half of those in country Y, it may be cost-effective for a unit in Y to dispatch the components to a unit in X for assembly and then have the completed product returned to Y or even shipped directly to a final purchaser.

36.13 Prior to the 2008 SNA, it was recommended that components for assembly should be recorded as delivered

to the unit in country X and that the whole of the value of the completed product should be recorded as output of X and exports from X to Y. This does not match the treatment of grain milling or, for example, repairs to machinery where no such change of ownership of the goods being processed is imputed. Imputing a change of ownership of the parts to be assembled gives rise to significant data compilation problems because the value of the assembled product may be greater than the cost of the components plus the fee to assemble them. The value of the finished product may incorporate the results of research and development of the unit contracting the assembly, for instance. The integrated framework of the SNA recommends that products should only be recorded as being delivered to another unit if there is a change of economic ownership or, in the case where both producing units belong to the same enterprise, the producing unit taking delivery also assumes responsibility for subsequent risks and rewards of production such as deciding how much to process, what price to charge and when to sell.

36.14 The question arises of how to record the activity of assembling goods to order for another unit in the supply and use tables and the input-output table. The processes of assembly for oneself and for another are physically similar but the economics are different.

36.15 Suppose in year 1, a processing unit converts products only on own account. In year 2, the unit processes the same amount on its own account but also processes a similar amount on behalf of another. Suppose the cost of items processed in year 1 is 90, the cost of associated products needed to assemble them is 10 and the value added is 35. The total value of output is thus 135. In year 2, all other things being equal, intermediate consumption increases by another 10 to 110 and value added to 70 bringing the value of output to 180. The change in the structure of production is difficult to understand in the absence of information on the change in the role of the producer who is operating no longer only on his own behalf but also on behalf of others.

36.16 There are essentially two ways to proceed. The first is to treat processing on own account and on behalf of another as different types of activity and different products. In this way in the second year the producer would have one activity with inputs of 100, value added of 35 and output of 135 as in the first year, plus another activity with inputs of 10, value added 35 and output of 45.

36.17 The second alternative is to show the intermediate inputs in the second year as 200, value added as 70 and output as 270. Value added is the same under both options and the comparison between the second and the first year makes more sense from a transformation point of view under option 2. However, adding an extra 90 to both output and intermediate consumption is essentially artificial. Further, as noted above, it may be difficult for the processor to put a value on the components he receives and the output he provides to the other unit. The chances are that he only knows that he receives a fee of 45 to cover his incidental expenses of 10 and leave an amount of value added, 35 in this case. These options are shown in table 36.2.

Table 36.2: Options for recording goods not changing economic ownership

	Year 1	Year 2	Option 1		Option 2
Cost of materials	90	90	90		180
Other costs	10	20	10	10	20
Total intermediate consumption	100	110	100	10	200
Value added	35	70	35	35	70
Output	135	180	135	45	270

36.18 It should be emphasized that it is option 1 that is recommended for goods sent abroad for processing. Option 1 more accurately reflects the economic processes taking place while option 2 focuses on the physical transformation process.

36.19 When goods are sent abroad for processing, they are recorded as neither exports of goods by the country holding economic ownership, nor as imports of goods by the processing country in either the integrated framework of the SNA or *BPM*. Similarly, after processing they are recorded neither as exports by the processing country nor as imports of goods by the country of economic ownership. The only item recorded

as imports and exports is the fee agreed between the economic owner and the processor.

36.20 The physical flows of the goods will continue to appear in the merchandise trade figures. However, the product code after processing may be different from the code on entry, making it difficult to match the incoming and outgoing flows.

36.21 The presentation of option 2 suggests that the fee can be derived as the difference between the value of the goods on arrival and departure from the processing country but while this may sometimes give a reasonable approximation of the processing fee, there are many reasons why this may not be so.

a. If processing takes any significant amount of time, there may be holding gains and losses affecting the value of the goods. These accrue to the economic owner, not the processor.

b. Goods may be lost or damaged or may simply become obsolete while in process. (This has been observed in the case of electronic components.) These other volume changes also apply to the economic owner and not the processor.

c. The value of the processed goods may be greater than the costs of the components and the processing fee to the extent that the finished product incorporates part of the value of R&D treated as fixed capital formation of the economic owner.

36.22 All these situations reinforce the preference for option 1 over option 2 in table 36.2.

3. Supply and use tables and institutional sector accounts

36.23 As explained in chapter 15 on Supply and use tables, it is possible to derive a balanced estimate of GDP using the three approaches to measuring GDP from a set of supply and use tables. Since these tables can be expressed in volume terms, estimates can also be made of growth rates based on the tables. However, to complete the sequence of economic accounts, production accounts are needed by institutional sector. To ensure that the supply and use table and the sequence of economic accounts are perfectly integrated and consistent, it is desirable to take the part of the use table showing intermediate consumption and the components of value added and allocate the columns to institutional sectors.

36.24 The starting point for the compilation is the part of the use table in table 15.12 relating to intermediate consumption and value added. This is shown in a somewhat aggregated form in table 36.3.

36.25 The easiest allocation is for financial corporations since typically such corporations do not undertake secondary activity and other institutional units do not undertake any financial activity. When these conditions prevail, the column for the finance and insurance activity can be taken in its entirety as appropriate for the institutional sector. As the output of the central bank is typically producing non-market output, this should be allocated to non-market output. Moreover, it is possible that financial corporations may undertake some production for own final use (as capital formation), in which case some part of an appropriate column in the section of table 36.3 relating to own account production should be added. No such adjustment has been made in this example.

36.26 With the exception of the central bank (see above), the columns relating to non-market producers must be allocated between general government and NPISHs. In addition, though not in this example, it is possible that either general government or NPISHs may have an establishment undertaking market production. It is also possible that both general government and NPISHs may have some production for own final use (as capital formation) but none has been assumed here.

36.27 The last step is to allocate all columns not yet accounted for between non-financial corporations and households. An indication that some part of a market production activity should be allocated to households is the presence of mixed income as part of the value added of the activity. Thus, in this example, some parts of market production of agriculture, manufacturing, construction and trade are attributable to households as well as production for own final use. (As noted in general some of production for own final use will be attributable to other sectors. It is not done so here for reasons of simplicity at such an aggregate level.)

36.28 Once these calculations are complete, table 36.4 results, showing for each sector not just total intermediate consumption but also a product breakdown of this as well as the items for value added.

36.29 The figures shown for output, intermediate consumption, and the elements of value added for each institutional sector are those that appear in the production account and generation of earned income account in the sequence of economic accounts.

Table 36.3: The use table from table 15.12

	Use of products	Total supply at purchasers' prices		Taxes on products	Subsidies on products		Intermediate consumption of industries (by ISIC categories)										
							Market										
							Agriculture, forestry and fishing	Manufacturing and other industry	Construction	Trade, transport, accommodation and food	Information and communication	Finance and insurance	Real estate activities	Business services	Education, human health and social work	Other services	Sub-total market
							(A)	(B-E)	(F)	(G-I)	(J)	(K)	(L)	(M-N)	(P-Q)	R-T and U	
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Products (by CPC section)																
	Total uses																
1	Agriculture, forestry and fishery products (0)	128					2	71	0	3	1	2	1	2	0	0	82
2	Ores and minerals; electricity, gas and water (1)	263					3	190	1	6	3	2	1	2	0	0	208
3	Manufacturing and other industrial products (2-4)	2 161					27	675	63	44	16	16	9	19	4	5	878
4	Constructions and construction services (5)	261					1	9	5	3	1	1	1	1	0	0	22
5	Trade, accommodation, food and beverage servicing services; transport services (6)	216					3	65	3	25	4	4	2	4	0	0	110
6	Financial and related services (7 less 72-73)	159					1	36	5	18	1	3	3	7	1	1	76
7	Real estate services; and rental and leasing services (72-73)	195					1	15	1	8	2	5	2	4	0	1	39
8	Business and production services (8)	272					2	70	12	15	10	18	9	19	7	9	171
9	Education, human health and social care services (92-93)	275					0	1	0	0	0		0	1	0	0	2
10	Other services (94-99)	95					1	1	0	1	1	1	0	1	0	0	6
11	Public administration and related services (91)	168					0	0	0	0	0	0	0	0	0	0	0
12	Direct purchases abroad by residents	43															0
13	Domestic purchases by non-residents	0															0
14	Total	4 236					41	1 133	90	123	39	52	28	60	12	16	1 594
15	Total gross value added/GDP			141	- 8		37	728	118	139	61	92	66	123	51	66	1 481
16	Remuneration of employees						19	547	79	102	32	42	49	79	43	47	1 039
17	Taxes less subsidies on production and imports			141	- 8		- 2	43	5	- 5	- 1	4	6	4	1	1	56
18	Mixed income, gross						4	30	3	9	0	0	0	0	0	0	46
19	Operating surplus, gross						16	108	31	33	30	46	11	40	7	18	340
20	Depreciation - gross mixed income						1	3	0	1	0	0	0	0	0	0	5
21	Depreciation - gross operating surplus						8	80	11	30	7	12	5	12	1	2	168
22	Depletion - gross operating surplus						0	0	0	0	0	0	0	0	0	0	0
23	Depletion - gross mixed income						0	30	0	0	0	0	0	0	0	0	30
24	Total output						78	1 861	208	262	100	144	94	183	63	82	3 075
25	Labour inputs (hours worked)						1 840	31 962	4 244	8 786	1 332	1 290	920	1 562	494	642	53 072
26	Gross fixed capital formation						10	122	8	49	14	7	5	7	1	2	225
27	Closing stocks of fixed assets						142	1 861	143	731	208	143	102	147	22	29	3 528

Table 36.3 (cont): The use table from table 15.12

Intermediate consumption of industries (by ISIC categories)											Exports		Final consumption expenditure							Gross capital formation			
Own final use				Non-market													General government						
Agriculture, forestry and fishing	Construction	Real estate and private household services	Sub-total own final use	Finance and insuranc	Education, human health and social services	Public Administration	Sub-total non-market	Total industry	Total economy		Goods	Services	Sub-total final consumptio expenditure	Households	NPISHs	Central bank	Sub-total	Collective	Individual	Sub-total gross capital formation	Gross fixed capital formati	Changes in inventories	Acquisition less disposals valuables
(A)	(F)	(L)		(K)	(P-Q)	(O)																	
(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)
1	0	0	1	0	3	2	5	88			7	0	30	28	0	0	2	0	2	3	2	1	
0	0	0	0	0	5	4	9	217			7	0	40	40	0	0	0	0	0	- 1	0	- 1	
5	17	10	32	0	42	38	80	990			422	0	573	570	0	0	3	0	3	176	161	5	10
0	0	0	0	0	11	7	18	40			6	0	2	2	0	0	0	0	0	213	190	23	
0	0	0	0	0	4	5	9	119			0	55	42	42	0	0	0	0	0				
0	2	3	5	0	6	15	21	102			0	2	55	53	0	2	0	0	0				
0	0	0	0	0	8	10	18	57			0	1	115	115	0	0	0	0	0	22	22	0	
0	5	7	12	0	15	24	39	222			0	9	40	40	0	0	0	0	0	1	1	0	
0	0	0	0	0	24	8	32	34			0	2	242	21	33	0	188	12	176				
0	0	0	0	0	2	2	4	10			0	0	85	85	0	0	0	0	0				
0	0	0	0	0	1	1	2	2				0	176	5	2	0	169	166	3				
													43	43									
											20	9	- 29	- 29									
6	24	20	50	0	121	116	237	1 881			462	78	1 414	1 015	35	2	362	178	184	414	376	28	10
5	12	80	97	2	94	62	158	1 736	1 869														
0	0	0	0	2	70	39	111	1 150	1 150														
0	0	0	0	0	1	1	2	58	191														
3	12	0	15					61	61														
2	0	80	82	0	23	22	45	467	467														
3	0	0	3					8	8														
1	0	15	16	0	20	10	30	214	214														
0	0	0	0	0	0	0	0	0	0														
0	0	0	0	0	0	0	0	30	30														
11	36	100	147	2	215	178	395	3 617	3 617														
218	780	0	998		7 299	8 000	15 299	69 369															
1	1	124	126		13	12	25	376															
17	17	1 851	1 885		201	169	370	5 783															

Table 36.4: Intermediate consumption and value added cross-classified by industry and institutional sector

Use of products	Non-financial corporations										Financial corporations	
	Agriculture, forestry and fishing	Manufacturing and other industry	Construction	Trade, transport, accommodation and food	Information and communication	Real estate activities	Business services	Education, human health and social work	Other services	**Total industry**	Finance and insurance	**Total industry**
Goods and services, (by CPC section)												
Total uses												
1. Agriculture, forestry and fishery products (0)	2	68	0	3	1	1	2	0	0	**77**	2	**2**
2. Ores and minerals; electricity, gas and water (1)	3	182	1	6	3	1	2	0	0	**198**	2	**2**
3. Manufacturing products (2-4)	24	643	61	38	16	9	19	4	5	**819**	16	**16**
4. Constructions and construction services (5)	1	8	5	3	1	1	1	0	0	**20**	1	**1**
5. Trade, accommodation, food and beverage servicing services; transport services (6)	3	61	3	23	4	2	4	0	0	**100**	4	**4**
6. Financial and related services (7 less 72-73)	1	36	5	18	2	3	7	1	1	**74**	2	**2**
7. Real estate services; and rental and leasing services (72-73)	1	15	1	8	2	2	4	0	1	**34**	5	**5**
8. Business and production services (8)	2	68	11	14	9	9	19	7	9	**148**	19	**19**
9. Education, human health and social care services (92-93)	0	1	0	0	0	0	1	0	0	**2**	0	**0**
10. Other services (94-99)	1	1	0	1	1	0	1	0	0	**5**	1	**1**
11. Public administration and related services (91)	0	0	0	0	0	0	0	0	0	**0**	0	**0**
14. Total	38	1 083	87	114	39	28	60	12	16	**1 477**	52	**52**
17. Total gross value added/GDP	31	691	115	127	61	66	123	51	66	**1 331**	94	**94**
28. Total output	69	1 774	202	241	100	94	183	63	82	**2 808**	146	**146**
Remuneration of employees	18	540	79	99	32	49	79	43	47	**986**	44	**44**
Taxes less subsidies on production and imports	- 2	43	5	- 4	- 1	6	4	1	1	**53**	4	**4**
Gross mixed income												
Gross operating surplus	15	108	31	32	30	11	40	7	18	**292**	46	**46**
Depreciation - mixed income												
Depreciation - operating surplus	8	80	11	31	7	5	12	1	2	**157**	12	**12**
Depletion - mixed income												
Depletion - operating surplus	0	30	0	0	0	0	0	0	0	**30**	0	**0**
Net mixed income												
Net operating surplus	7	- 2	20	1	23	6	28	6	16	**105**	34	**34**

Table 36.4 (cont): Intermediate consumption and value added cross-classified by industry and institutional sector

Use of products	General government			NPISHs		Households						Total
	Education, human health and social work	Public Administration	**Total industry**	Education, human health and social work	**Total industry**	Agriculture, forestry and fishing	Manufacturing and other industry	Construction	Trade, transport, accommodation and food	Real estate activities	**Total industry**	**Total**
Goods and services, (by CPC section)												
Total uses												
1. Agriculture, forestry and fishery products (0)	3	2	**5**	0	**0**	1	3	0	0	0	**4**	**88**
2. Ores and minerals; electricity, gas and water (1)	4	4	**8**	1	**1**	0	8	0	0	0	**8**	**217**
3. Manufacturing (2-4)	36	38	**74**	6	**6**	8	32	19	6	10	**75**	**990**
4. Construction (5)	9	7	**16**	2	**2**	0	1	0	0	0	**1**	**40**
5. Trade, accommodation, food and beverages; transport services (6)	4	5	**9**	0	**0**	0	4	0	2	0	**6**	**119**
6. Finance and Insurance (7) excluding real estate	5	15	**20**	1	**1**	0	0	2	0	3	**5**	**102**
7.Real estate services; and rental and leasing services (72-73)	7	10	**17**	1	**1**	0	0	0	0	0	**0**	**57**
8.Business and production services (8)	13	24	**37**	2	**2**	0	2	6	1	7	**16**	**222**
9.Community, social services (92,93)	21	8	**29**	3	**3**	0	0	0	0	0	**0**	**34**
10. Other services (94-99)	1	2	**3**	1	**1**	0	0	0	0	0	**0**	**10**
11. Public Administration (91)	1	1	**2**	0	**0**	0	0	0	0	0	**0**	**2**
14. Total	104	116	**220**	17	**17**	9	50	27	9	20	**115**	**1 881**
17. Total gross value added/GDP	76	62	**138**	18	**18**	11	37	15	12	80	**155**	**1 736**
28. Total output	180	178	**358**	35	**35**	20	87	42	21	100	**270**	**3 617**
Remuneration of employees	59	39	**98**	11	**11**	1	7	0	3		**11**	**1 150**
Taxes less subsidies on production and imports	0	1	**1**	1	**1**	0	0	0	- 1	0	**- 1**	**58**
Gross mixed income						7	30	15	9		**61**	**61**
Gross operating surplus	17	22	**39**	6	**6**	3	0	0	1	80	**84**	**467**
Depreciation - mixed income						4	3	0	1	0	**8**	**8**
Depreciation - operating surplus	17	10	**27**	3	**3**	1	0	0	- 1	15	**15**	**214**
Depletion - mixed income						0	0	0	0		**0**	**0**
Depletion - operating surplus	0	0	**0**	0	**0**	0	0	0	0		**0**	**30**
Net mixed income						3	27	15	8	0	**53**	**53**
Net operating surplus	0	12	**12**	3	**3**	2	0	0	2	65	**69**	**223**

C. Deriving an input-output table

1. What is an input-output table?

36.30 Essentially an input-output table is derived from a use table where either the columns representing industries in the two left-most quadrants are replaced by products or where the products in the two topmost quadrants are replaced by industries. The resulting intermediate consumption table is then square, showing products in both rows and columns or industries in both. In both cases the row totals for the complete table match the column totals for the complete table, product by product or industry by industry as the case may be.

36.31 The resulting tables are often referred to as being symmetric input-output tables. From a conceptual point of view, however, it is incorrect to use the term "symmetric", in that the transformations reflect industry-adjusted product by industry input-output tables or product by product-adjusted industry input-output tables. This means, in essence, that there is no symmetry in the dimension of the table nor symmetry in mathematical terms; they are just square tables. Thus these tables should be referred to as "input-output tables" and not as "symmetric input-output tables".

36.32 The process of replacing the product dimension by an industry one is based on one of several possible models, to be discussed below. This process necessarily means that an input-output table is further removed from basic data sources than a supply and use table and it is therefore useful to review why making this transition is so useful.

36.33 Note that in table 15.12, there is a product for ores and minerals, electricity and water but no column for it. If there is no industry for which this is the principal product, identifying the primary producers rather than the number of products will determine the final size of the square table.

2. Analytical potential of an input-output table

36.34 Input-output tables have algebraic properties that make them particularly suitable for analyses that enable estimates to be made of the direct effect, indirect effect and induced effect of changing relative prices, of labour and capital requirements in the face of changing output levels, of the consequences of changing patterns of demand and so on. They may also be used as the basis for an expanded version that may be used to estimate the demands made by the economy on the environment, for instance.

36.35 As noted in the introduction, there is a vast literature on how to compile and use input-output tables. The purpose of this section is simply to indicate the key aspects of converting a pair of supply and use tables into an input-output table.

36.36 Suppose the entries in the inter-industry table are each divided by the figure for output at the bottom of the corresponding column, and the resulting matrix is designated as A; the vector of outputs is written as x and the vector of total final uses is written as y. Then

$$Ax + y = x$$

This can be rewritten as

$$(I-A)\,x = y$$

or

$$x=(I-A)^{-1}y.$$

36.37 The matrix (I-A) is known as the Leontief matrix, after the man who pioneered the use of input-output tables and the matrix $(I-A)^{-1}$ is known as the Leontief Inverse. It is the last formulation that gives the analytical power to input-output analysis.

36.38 Suppose there is an increase in demand, for manufactured products, say. Looking at even the supply and use table it can be seen that to increase the output of these goods, more inputs of almost all types of products are needed. This increase in demand for a range of products is called the direct effect of a change in demand. However, the increase in demand in all these products causes a further round of increases in output for all products and this in turn triggers another set of increases in output and so on. Each round of effects is smaller

than the last until it eventually becomes insignificant. The total of all second and subsequent round effects is called the indirect effect of a change in demand.

36.39 In terms of the algebra just introduced, the direct effect is equal to Ay, the second round effect to A^2y, the third round effect to A^3y and so on. It can be shown that $(I-A)^{-1}$ can be written as $A+A^2+A^3+A^4$ etc. This is where the power of having a square matrix comes from since A needs to be square for this formulation to work.

36.40 As long as changes in demand, y, are sufficiently small that the average coefficients in A are likely to be good approximations to the new situation, the new level of x can be calculated. The approach breaks down if the changes in demand are so great that significant changes in A are likely to follow and marginal rather than average coefficients are needed.

36.41 The matrix A is also sometimes called a matrix of technological coefficients and can provide insights into the way an economy works. In an economy dominated by primary products with little processing carried out in the domestic economy, there are relatively few significant non-zero elements in A. As the economy develops and processing of primary products becomes more commonplace, A becomes more populated with entries reflecting greater vertical and horizontal integration of activities within the economy. By exploring different industries associated with different stages in the production process it is possible to say where value added is generated. For example, cotton is grown as an agricultural product. It is then subject to separation into lint and seed (ginning), then the lint is converted to yarn and the yarn to fabric. If each of these activities appears in a different industry, it is possible to see where the value added between the growing of the cotton and the eventual fabric in which it is used arises.

3. Secondary products

36.42 An industry classification such as *ISIC* essentially identifies industries in terms of the sorts of goods or services they typically produce. However, there are more products than industries and, for all sorts of reasons, some products may be made in several industries.

36.43 In order to limit the number of products per unit and to allow integration with basic production statistics, the concept of establishment is introduced. In principle, an establishment produces only one product at one location but the integrated framework of the SNA recognizes that in practice it is not possible to separate production into such fine detail. Dealing with the fact that many establishments produce more than one product is fundamental to the idea of calculating an input-output table.

36.44 Different choices of statistical units are available for the compiler and it is important to have a clear understanding of the impact of the choice of different statistical units has on the supply and use tables and on the input-output tables. For supply and use tables and input-output tables, the focus is on two specific statistical units: enterprises and establishments (local kind-of-activity units). The establishment is the recommended unit for the compilation of the production part of the integrated framework of national accounts and therefore the compilation of supply and use tables and input-output tables. This means, as a rule, that multi-product enterprises must be partitioned into smaller and more uniform units regarding their kind of production, if possible. For more details on the choice between enterprises and establishments, see paragraphs 6.35 and 6.36.

36.45 The reason that manipulation of supply and use tables is needed to produce an input-output table is the existence of secondary products. If there were the same number of industries as products, and if each industry only produced one product, the supply table for the domestic economy would be unnecessary; the column totals for industries would be numerically equal to the row totals for products and the inter-industry table would be square as originally compiled. As noted elsewhere, the intent behind using establishments rather than enterprises, and working at a fairly detailed level in the supply and use tables, is to get as close to this situation as is reasonably practicable. Inevitably though some secondary production remains.

36.46 There are three types of secondary production:

a. Subsidiary products: those that are technologically unrelated to the primary product. Just a few examples include a large retailer with a fleet of trucks used primarily for its own purposes that may occasionally offer transport services to another unit, a farmer who uses part of his land as a caravan site, or a mining

company that builds access roads and accommodation for its workers.

b. By-products: products that are produced simultaneously with another product but which can be regarded as secondary to that product, for example gas produced by blast furnaces.

c. Joint products: products that are produced simultaneously with another product that cannot be said to be secondary (for example beef and hides).

36.47 In order to reduce the supply and use tables to one single input-output table two possibilities exist. One is to express the input-output table in terms of products only; the other is to express the input-output table in terms of industries.

4. Reallocating secondary products

36.48 There are two basic approaches to eliminating secondary products. Both come from applying information from the use table to the domestic output part of the supply table to reduce it to a purely diagonal one. Once this is done, the supply table contains no further useful information and is no longer presented. The transformed use table is what is referred to as an input-output table.

36.49 In deriving a product by product input-output table in the simplest possible way, the final use quadrant of the use table is unaltered. It already expresses final use by product and does not need changing. The intermediate consumption and value added parts of the use table, though, need to be changed from an industry dimension to a product one. The row totals of the table already show the correct product totals so the exercise consists of reallocating entries from one column to another within the given row total. This has been known as a technology approach. It assumes that the demand for intermediate consumption and labour and capital inputs are determined by the nature of the products made. It is also worth noting that, in the transformations used where technology assumptions are applied, no technology in the physical production processes is involved, but only economic transactions measured in monetary terms. With the transformations, the institutional characteristics of the industries remain unaffected.

36.50 In deriving an industry by industry input-output table in the simplest possible way, the value added part of the use matrix is unaltered and because the level of output will not alter, only the composition of intermediate consumption changes, not its total. Thus the exercise is one of reallocating items between rows but not between columns. In contrast to the product by product case, the quadrant relating to final uses will change and will show demand related to the industry supplying the products and not to the products themselves. This is called a sales structure approach. It assumes that as the level of output of an industry changes, the pattern of sales will remain the same.

36.51 Both these assumptions, the technology assumption and the sales structure assumption, are rather simplistic and in practice a more generalized approach may be used but it is helpful first to examine each of the assumptions in a little more detail.

Product by product input-output tables

36.52 There are two ways in which a product by product input-output table can be derived. These are:

a. The product technology assumption where each product is produced in its own specific way irrespective of the industry where it is produced – known as Model A with possible occurrence of negative elements.

b. The industry technology assumption where each industry has its own specific means of production irrespective of its product mix – known as Model B with no occurrence of negative elements.

36.53 It is simplest to explain these by example. In the upper part of table 15.12, the construction industry is shown as producing 6 units (out of 208) of manufacturing products. In the lower part of table 15.12, reproduced as table 36.3, the inputs necessary for manufacturing and for construction are shown. These are reproduced in the first two numeric columns in table 36.5. The next two numeric columns express these in percentage form. Thus, for example, one unit of manufacturing requires 0.038 units of agricultural products, 0.102 units of ores and minerals and so on. Construction uses no agricultural products, 0.005 units of ores and minerals and

so on.

36.54 In order to create the product by product input-output table, it is necessary to deduct the costs associated with the production of 6 units of manufactured goods from the column for construction and add it to the column for manufacturing. On completion of this exercise for all secondary production, the columns will represent products rather than industries.

Table 36.5: A numerical example of reallocating products from construction to manufacturing

	Use of products	Manufacturing and other industry	Construction	Manufacturing and other industry	Construction	Manufacturing and other industry	Construction	Manufacturing and other industry	Construction
		Use table		Coefficient form		Industry technology		Product technology	
1	Agriculture, forestry and fishery products (0)	71	0	3.8	0.0	71.0	0.0	71.2	-0.2
2	Ores and minerals; electricity, gas and water (1)	190	1	10.2	0.5	190.0	1.0	190.6	0.4
3	Manufacturing (2-4)	675	63	36.3	30.3	676.8	61.2	677.2	60.8
4	Construction (5)	9	5	0.5	2.4	9.1	4.9	9.0	5.0
5	Trade, accommodation, food & beverages; transport services (6)	65	3	3.5	1.4	65.1	2.9	65.2	2.8
6	Finance and Insurance (7 less 72-73)	36	5	1.9	2.4	36.1	4.9	36.1	4.9
7	Real estate services; and rental and leasing services (72-73)	15	1	0.8	0.5	15.0	1.0	15.0	1.0
8	Business and production services (8)	70	12	3.8	5.8	70.3	11.7	70.2	11.8
9	Community and social services (92-93)	1	0	0.1	0.0	1.0	0.0	1.0	0.0
10	Other services (94-99)	1	0	0.1	0.0	1.0	0.0	1.0	0.0
	Public administration (91)	0	0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	1 133	90	61	43	1135.6	87.4	1136.7	86.3
	Total gross value added	728	118	39	57	731.4	114.6	730.3	115.7
	Total output	1 861	208	100	100	1 867	202	1 867	202

Product technology assumptions

36.55 Under the product technology assumption, the coefficients showing how manufactured products are produced are those of the manufacturing industry regardless of where they are actually produced. In this case, to reallocate the 6 units of manufacturing products from the construction industry a set of inputs derived as 6 times the coefficients for manufacturing is added to the manufacturing column and deducted from the construction column. The results are shown in the seventh and eighth numeric columns of table 36.5.

36.56 It is important to note a problem that arises under this assumption. When the product technology assumption is used, manufactured products produced by the construction industry are assumed to use a small amount of food. However, no agricultural products are actually recorded as being used in the construction industry so deducting these inputs from the recorded entries for construction leads to a negative entry. Negative entries cannot appear under the industry technology assumption. Since negative entries are logically impossible, this is one argument in favour of using the industry assumption rather than the product assumption.

Industry technology assumption

36.57 Under the industry technology assumption, the coefficients showing how manufactured products are produced are assumed to depend on the industry they happen to be produced in. Thus to reallocate the 6 units of manufacturing products from the construction industry to a column that will now refer to manufactured

products only (ignoring other secondary products for the moment) a set of inputs, derived as 6 times the coefficients for construction is added to the manufacturing column and deducted from the construction column. The results of this are shown in the fifth and sixth numeric columns of table 36.5.

Industry by industry input-output tables

36.58 Just as there are two ways in which a product by product input-output table can be derived, there are two ways in which an industry by industry input-output table can be derived. These are:

a. The fixed industry sales structure where it is assumed that each industry has its own specific sales structure, irrespective of its product mix – known as Model C with possible occurrence of negative elements.

b. The fixed product sales structure where it is assumed that each product has its own specific sales structure, irrespective of the industry where it is produced – known as Model D with no occurrence of negative elements.

36.59 Although a table similar to table 36.5 is not presented for the industry by industry input-output tables, its construction is similar and straightforward but would show the entries across the rows of the use tables rather than down the columns.

36.60 In order to create an industry by industry input-output table, it is necessary to move the use of 6 units of manufactured products from the row for the manufacturing to the row for the construction. On completion of this exercise for all secondary production, the rows will represent industries rather than products. It is worth noting that, if an enterprise in broken down into separate establishments, actual data on transactions between these establishments may be available to inform the compilation of an industry by industry input-output table.

Fixed industry sales structures

36.61 Here the 6 units of manufactured goods supplied by the construction industry are reallocated to the construction row from the manufacturing row using the proportions of the construction row. Such a table can contain negative elements.

Fixed product sales structure

36.62 In this case, to allocate the 6 units of manufactured goods supplied by the construction industry to the row for construction, a proportion of the row for manufacturing is allocated to the construction row using the proportions in the manufacturing row. It follows that such a matrix will not contain negative entries.

The choice of approach to be used

36.63 There are four basic choices open to the input-output compiler:

a. A product by product approach using a product technology assumption;

b. A product by product approach using an industry technology assumption;

c. An industry by industry approach assuming a fixed industry sales structure;

d. An industry by industry approach assuming a fixed product sales structure.

Options a and c may result in negative entries; options b and d do not.

36.64 Both product by product and industry by industry input-output tables may be compiled. They serve different analytical functions. For example, to ensure that price indices are strictly consistent, a product by product input-output table is to be preferred. For a link to labour market questions, an industry by industry input-output table may be more useful. Although traditionally a lot of interest focused on the product by product

input-output tables, this was accompanied in large part by an attention to the underlying technology. Increasingly the economic interaction of different industries has brought more interest in the industry by industry input-output tables.

Hybrid approaches

36.65 In practice, no single method is used on its own. Knowledge of the type of product or industry in question should dictate whether an industry-based conversion procedure or a product-based one is most appropriate. Some secondary products may be dealt with one way and others another despite the fact that, on occasion, negative values may initially appear.

36.66 The extent of variation between the various approaches will depend on a number of factors, including in particular the extent of secondary production in the supply table. In general, the greater the degree of disaggregation and thus the less secondary production to be reallocated, the closer the input-output tables will resemble the supply and use tables. Indeed some countries prefer to work with very detailed supply and use tables and not produce input-output tables at all.

36.67 As an illustration of the differences involved, tables 36.6 and 36.7 show the results of converting the supply and use tables in chapter 15 to, first, a product by product input-output table using only the industry technology assumption and then an industry by industry input-output table using only the product sales structure.

Table 36.6: Example of a product by product input-output table

Use of products	Intermediate consumption by product groups												Exports						General government							
	Agriculture, forestry and fishery produ	Manufacturing and other industrial products	Constructions and construction servic	Trade, accommodation, food and beverage servicing services; transport	Financial and related services	Real estate services; and rental and leasing services	Business, production and information services	Education, human health and social c services	Other services	Public administration and related services	Total industry		Goods	Services	Sub-total final consumption expenditure	Households	NPISHs	Central bank	Sub-total	Collective	Individual	Sub-total gross capital formation	Gross fixed capital formation	Changes in inventories	Acquisition less disposals of valuables	Total economy
Agriculture, forestry and fishery products	3	43	0	3	2	1	3	3	0	2	60		7	0	17	15	0	0	2	0	2	3	2	1	0	87
Manufacturing and other industrial products	32	658	74	39	18	21	37	47	6	42	974		403	0	449	446	0	0	3	0	3	84	80	4	0	1 910
Constructions and construction services	1	10	5	3	1	1	2	11	0	7	40		6	0	2	2	0	0	0	0	0	196	173	23	0	244
Trade, accommodation, food and beverage servicing services; transport services	4	69	6	18	4	2	6	8	0	5	123		16	55	36	36	0	0	0	0	0	3	3	0	0	233
Financial and related services	1	34	7	16	0	6	2	7	1	15	89		0	2	55	53	0	2	0	0	0	0	0	0	0	146
Real estate services; and rental and leasing services	1	16	1	7	5	2	5	8	1	10	57		0	1	115	115	0	0	0	0	0	22	22	0	0	195
Business, production and information services	2	72	16	12	17	15	26	21	10	22	212		0	9	33	33	0	0	0	0	0	1	1	0	0	255
Education, human health and social care services	0	1	0	0	0	0	1	24	0	8	34		0	2	242	21	33	0	188	12	176	0	0	0	0	278
Other services	1	1	0	1	1	0	2	2	0	2	10		0	0	81	81	0	0	0	0	0	0	0	0	0	91
Public administration and related services	0	0	0	0	0	0	0	1	0	1	2		0	0	176	5	2	0	169	166	3	0	0	0	0	178
Adjustments:																										
Taxes less subsidies	1	35	5	2	1	1	0	1	0	2	48		10	0	54	54	0	0	0	0	0	21	21	0	0	133
Imports	0	213	0	10	3	0	6	0	0	0	232		0	0	140	140	0	0	0	0	0	84	74	0	10	456
Direct purchases abroad by residents															43	43										43
Purchases in domestic market by non-residents													20	9	- 29	- 29										0
Total at purchaser's prices	46	1 151	114	110	52	50	90	133	19	116	1 881		462	78	1 414	1 015	35	2	362	178	184	414	376	28	10	4 249
Total gross value added/GDP	41	758	130	123	94	145	166	145	72	62	1 736	1 869														
Remuneration of employees	19	565	80	90	44	51	100	113	49	39	1 150															
Taxes less subsidies on production	- 2	43	5	- 4	4	6	3	2	1	1	58	191														
Depreciation	12	88	11	27	12	20	17	21	3	10	222															
Depletion	0	30	0	0	0	0	0	0	0	0	30															
Mixed income, gross	6	33	13	8	0	0	0	0	0	0	61															
Operating surplus, gross	18	118	31	29	46	88	63	30	23	22	467															
Total output	87	1 909	244	233	146	195	256	278	91	178	3 617															

Table 36.7: Example of an industry by industry input-output table

Use of industry output	Intermediate consumption by industry												Exports						General government							
	Agriculture, forestry and fishing	Manufacturing and other industry	Construction	Trade, transport, accommodation and food	Finance and insurance activities	Real estate activities	Business, information and communication servic	Education, human health and social work	Other services	Public administration, defence, social security, o public services	Total industry		Goods	Services	Sub-total final consumption expenditure	Households	NPISHs	Central bank	Sub-total	Collective	Individual	Sub-total gross capital formation	Gross fixed capital formation	Changes in inventories	Acquisition less disposals of valuables	Total economy
Agriculture, forestry and fishing	3	44	0	3	2	1	3	3	0	2	61		7	0	18	16	0	0	2	0	2	3	2	1	0	89
Manufacturing and other industry	32	632	72	43	18	20	39	46	5	41	948		392	2	435	432	0	0	3	0	3	85	81	5	0	1 862
Construction	1	13	5	3	1	1	2	11	0	7	44		8	0	5	5	0	0	0	0	0	187	165	22	0	244
Trade, transport, accommodation and food	4	74	7	21	4	2	8	9	0	6	135		20	53	45	45	0	0	0	0	0	8	7	0	0	262
Finance and insurance activities	1	31	7	18	0	6	3	7	1	15	89		0	2	55	53	0	2	0	0	0	0	0	0	0	146
Real estate activities	1	15	1	8	5	2	6	8	1	10	56		0	1	116	116	0	0	0	0	0	21	21	0	0	194
Business, information and communication services	2	76	17	14	17	15	29	21	9	22	223		5	9	41	41	0	0	0	0	0	5	4	0	0	282
Education, human health and social work	0	1	0	0	0	0	1	24	0	8	34		0	2	242	21	33	0	188	12	176	0	0	0	0	278
Other services	1	1	0	1	1	0	2	2	0	2	9		0	0	73	73	0	0	0	0	0	0	0	0	0	82
Public administration, defence, social security, other public services	0	0	0	0	0	0	0	1	0	1	2		0	0	176	5	2	0	169	166	3	0	0	0	0	178
Adjustments:																										
Taxes less subsidies	1	35	5	2	1	1	0	1	0	2	48		10	0	54	54	0	0	0	0	0	21	21	0	0	133
Imports	0	213	0	10	3	0	6	0	0	0	232		0	0	140	140	0	0	0	0	0	84	74	0	10	456
Direct purchases abroad by residents															43	43										43
Purchases in domestic market by non-residents													20	9	- 29	- 29										0
Total at purchaser's prices	47	1 133	114	123	52	48	99	133	16	116	1 881		462	78	1 414	1 015	35	2	362	178	184	414	376	28	10	4 249
Total gross value added/GDP	42	728	130	139	94	146	184	145	66	62	1 736	1 869														
Remuneraton of employees	19	547	79	102	44	49	111	113	47	39	1 150															
Taxes less subsidies on production	- 2	43	5	- 5	4	6	3	2	1	1	58	191														
Depreciation	13	83	11	31	12	20	19	21	2	10	222															
Depletion	0	30	0	0	0	0	0	0	0	0	30															
Mixed income, gross	7	30	15	9	0	0	0	0	0	0	61															
Operating surplus, gross	18	108	31	33	46	91	70	30	18	22	467															
Total output	89	1 861	244	262	146	194	283	278	82	178	3 617															

The database required for the transformation

36.68 The starting point for the production of an input-output table is a pair of supply and use tables both at basic prices. Even the calculation of the use table in basic prices is one step away from basic statistics and actual observations, reinforcing the fact that the input-output tables are analytical constructs, not a compilation of directly observed phenomena.

36.69 Further, it is advantageous to separate the use table at basic prices into two, one showing those elements relating to domestic output and the other those elements relating to imports. The statistical requirements for such a separation are demanding but the results allow considerable flexibility in the treatment of imports and permit a clear analysis of the impact of demand on supplies from resident producers and on foreign suppliers.

36.70 The exact manner of dealing with imports is a subject of considerable complexity where a number of options are available also. In some economies, some important products will only be imported and so separating these "non-competing" imports from the rest may be of particular interest.

36.71 Another topic that requires careful consideration is the degree of detail that is desirable for product and industry classifications. This may vary depending on the resources available to the statistical office and the sort of use to be made of the results.

D. Multi-country tables

36.72 The emergence of global value chains challenges conventional wisdom on how we look at economic globalisation and, in particular, the policies we develop around the analyses of the impacts of globalisation, including environmental footprints. This has also led to the compilation of statistics on global value chains and multi-country supply and use tables and multi-country input-output tables to estimate trade in value added indicators; see chapter 23 on Globalization for more detail on global value chains and trade in value added indicators. The role of national supply and use tables in generating multi-country supply and use tables and multi-country input-output tables is covered in this section.

36.73 In the absence of an internationally agreed statistical guidance to compile multi-country tables, international organisations and various research consortia have developed databases of national supply and use tables and national input-output tables as well as modelling for missing countries and missing data, as a starting point for compiling multi-country tables. In this respect, it is important to note, that these databases reflect different assumptions (e.g., to remove trade asymmetries) and modelling techniques, thereby producing different estimates.

36.74 The GIANT (Global Input-output AccouNTs) initiative is an inter-agency network consisting of the Asian Development Bank, the European Commission, the International Monetary Fund, the Organisation for Economic Co-operation and Development, the United Nations Economic Commission for Africa, the United Nations Economic Commission for Latin America and the Caribbean, and the World Trade Organisation. In this respect, the GIANT initiative has been set up to converge to a common benchmark of input data into the various existing regional initiatives that compile multi-country supply and use tables and multi-country input-output tables, thus ensuring at least mutual comparability and consistency among them – thus the GIANT initiative is key. This initiative also seeks to help provide users with consistent messages and results in terms of, for instance, global value chain participation or estimation of carbon footprints, irrespective of the specificities of any given multi-country supply and use tables or multi-country input-output tables.

1. Moving from national supply and use tables to multi-country input-output tables

36.75 Moving from national supply and use tables to multi-country supply and use tables involves firstly the combined use of national accounts, balance of payments and merchandise and services trade statistics to breakdown the main national accounts aggregates by product and by industry in a fully-fledged multi-country supply and use tables framework. However, there are conceptual differences between these datasets that constitute additional challenges in the compilation of multi-country supply and use tables.

36.76 Although methodological differences between merchandise trade flows and national accounts trade statistics

exist, in practice (in part because not all countries are able to fully-align with the ownership principle of the integrated framework of the SNA), these are generally not significant at the aggregated level (e.g., country's total exports of goods). However, there are significant challenges when considering particular products, activities and trading partners and these are briefly mentioned in this section.

36.77 Some of the specific challenges moving national supply and use tables to multi-country supply and use tables include:

- Splitting exports of goods and services for intermediate use or final uses and align these flows to the underlying ownership principles, in particular processing and merchanting activities as well as products that may have dual uses (e.g., as intermediate use and as final uses);
- Domestic exports or re-exports requiring detailed trade flows information about the country of origin (producer), country of consignment (re-exporter) and traded products;
- Bilateral exports to resolve the trade asymmetries and to determine the geographical distribution of total (domestic) exports from one country to another; and
- Estimation of direct purchases abroad (imports) by good or service, country of purchase and country of residence of the purchaser to be derived from limited data sources.

36.78 Major steps for compiling the multi-country supply and use tables include:

- Collection and compilation of harmonised national accounts control totals, for example, imports of goods separate from services and likewise for exports of goods and services;
- Estimation of balanced international trade flows with rebalanced national supply and use tables and balancing cross-country trade flows by product; and
- Linking the import use tables by bilateral trade partner shares or alternatively, linking the total exports by bilateral trade partners to import use tables. The first approach uses balanced trade statistics to split import use tables by country of origin (and implicitly estimate bilateral exports). The second approach uses balanced trade statistics to split total exports from supply and use tables at basic prices across trading partners and then use the import use tables (FOB) to split across intermediate uses and final uses.

36.79 Once multi-country supply and use tables are compiled, the methods and assumptions used to produce national input-output tables from national supply and use tables can be applied to produce multi-country input-output tables from multi-country supply and use tables. Alternatively, multi-country input-output tables can be produced from national input-output tables. However, these would not be consistent with multi-country supply and use tables, in particular in relation to the different assumptions made by countries to produce national input-output tables, also based on unbalanced trade statistics.

36.80 The standard format of multi-country input-output tables includes intermediate consumption, value added and final use sections similar to national input-output tables (see an example of a conceptual diagram in figure 36.1). The final uses of each country is the sum of final consumption expenditure and gross fixed capital formation of domestic and imported products, changes in inventories, exports as well as direct purchases abroad by residents. However, the definition of intermediate transactions is broader in a multi-country input-output table than the national concept, as the export from one country could be, for example, either intermediate use or final use in the importing country. In addition, taxes paid abroad such as tourism and value added taxes paid on direct purchases abroad are explicitly separated at the bottom of tax receiving territories.

Figure 36.1: Multi-country input-output table (basic prices) (A three-country, two-industry example)

Source: OECD

36.81 Many statistical and methodological challenges remain to improve the coverage and quality of the databases covering multi-country supply and use tables and multi-country input-output tables. Methodological enhancement includes issues related to asymmetries in bilateral trade flows in cross-border flows and direct purchases, as well as issues concerning distribution services, taxes and valuation differences in merchandise trade statistics. To address these challenges, there are coordinated initiatives amongst the international statistical organisations to unify and develop databases with agreed assumptions and data, for example, the GIANT initiative mentioned earlier.

36.82 There is various literature that documents the steps to compile multi-country supply and use tables and multi-country input-output tables, also including more detail on the additional challenges that need to be addressed, for example on the following websites: *Methodology - ESA supply, use and input-output tables - Eurostat* and *https://www.oecd.org/en/data/datasets/inter-country-input-output-tables.html*.

2. Uses of multi-country tables

36.83 There are various uses of multi-country supply and use tables and multi-country input-output tables feeding into the production of different analytical products. The following briefly touches on global value chains and trade in value added indicators.

36.84 Production, trade and investments are increasingly organised within so-called global value chains where the different stages of the production process are located across different countries. These global value chains have become a dominant feature of world trade, encompassing developing, emerging and developed economies. More details on global value chains are covered in chapter 23 on Globalisation and can also be found in *Accounting for global value chains: GVC satellite accounts and integrated business statistics*.

36.85 The consumption of goods and services is composed of inputs from various countries around the world. However, the flows of goods and services within these global production chains in conventional measures of international trade are not always reflected in a way which serves certain types of analysis. The trade in value added initiative addresses this issue by considering the value added by each country in the production of goods and services that are produced and consumed worldwide. More details on trade in value added indicators are available in chapter 23 on Globalisation and can also be found in the *UNECE Guide to measuring global production* and *Guide to OECD's Trade in Value Added Indicators.*

Chapter 37: From-whom-to-whom tables and related financial indicators

A. Introduction

37.1 This chapter describes the from-whom-to-whom (FWTW) dimension of the relevant components in the SNA sequence of economic accounts as well as a series of institutional sector related financial indicators. It focuses on the increased importance of highlighting the interrelationships among the institutional sectors of the economy, in terms of financial transactions and stocks as well as non-financial transactions. This chapter also discusses the usefulness of financial indicators in better understanding the financial risks and vulnerabilities of institutional sectors, both individually and how they relate to each other, including to the economy as a whole.

37.2 The SNA standard presentation of institutional sector accounts, as presented in the sequence of economic accounts in chapters 8 to 14, is not explicitly designed to show the intersectoral linkages, as it mainly focuses on answering "who does what", and not "who does what with whom".

37.3 However, the SNA provides a framework for developing data on transactions, other flows and stocks for financial assets and liabilities as well as current and capital transactions on a FWTW basis, because its underlying principles ensure that the linkages of the economic and financial actions of an economy and its sectors are captured.

37.4 Promoting the implementation of the FWTW intersectoral relationships for financial stocks and flows together with the institutional sector accounts is an important step towards filling one of the most significant data gaps identified during the global financial crisis that began in 2007-08.

37.5 The framework on a FWTW basis allows certain questions to be answered, such as: who is financing whom and who is exposed to whom, to what amount, and with which type of financial instrument? As regards the allocation of income, it also permits tracing who is paying income (e.g., interest and similar returns, hereafter referred to as interest) to whom and who is receiving income from whom.

37.6 The reasons to collect, compile and present FWTW flows and stocks are not only analytical but also statistical:

- FWTW statistical information considerably enriches the method of monitoring the transmission of monetary policy and the impacts of financial shocks. Because price and interest changes of the various financial assets and liabilities of sectors play a major role in this process, the analysis may also focus on stock-flow adjustments among the various institutional sectors. In this respect, FWTW statistical information makes it possible to analyse how inter-sectoral relationships for flows and stocks of financial assets and liabilities have changed as a consequence of policy decisions and other events.
- Compiling FWTW information may also help to identify data problems and improve quality, as well as improve consistency across related statistical products. Datasets can be covered by more than one data source (which may also provide an opportunity to enhance consistency across related macroeconomic statistical products), by only one data source, and by no data source owing to the lack of primary statistics. An example of a data point with no data sources might be trade credit and advances provided by non-financial corporations to households. If FWTW details on trade credit and advances are available in some sources and incorporated in the macro dataset, then the household estimates can be improved in quality (using a purely residual approach).

37.7 This chapter complements chapter 8 of the *MFSMCG* that deals with financial statistical tables and the IMF's balance sheet approach to financial stability work, as well as the chapter 6 of the *FPFS* that discusses from-whom-to-whom tables in more detail.

37.8 Section B presents a concise overview of the general structure of FWTW tables, while section C deals with some key data sources, such as source data containing counterparty data and security-by-security databases. Section D shows some possible uses of detailed FWTW tables. Section E concludes this chapter with an overview of financial indicators that can shed light on financial risks and vulnerabilities.

B. Overview of table structures and additional considerations

37.9 There are essentially two data structures for presenting FWTW information, both of which basically present similar information: matrix-type of presentations and presentations of FWTW information in a time series format. Both may relate to stocks of financial instruments, financial transactions, certain income and capital transactions, revaluations and other changes in volume data. While it is possible to construct matrix-type of FWTW tables for different periods, the time series perspective provides a better view on select information for consecutive periods.

1. Matrix-type of presentations of FWTW information

37.10 The matrix structure presents, for selected flows or stocks recorded in the sequence of economic accounts, an overview of the interlinkages between (sub)sectors and counterparty (sub)sectors, including those within (sub)sectors, for a certain period (in the case of flows) or at a certain point in time (in the case of stocks). Such matrices have been in use for some time but have gained much more prominence after the global financial crisis that began in 2007-08. This crisis leading to a cascade of events spreading across the world clearly showed the relevance of tracking these interdependencies, and the related financial risks and vulnerabilities, between sectors and countries.

Balance sheet matrix

37.11 The balance sheet matrix presents, for any given point in time, the stocks of financial assets and liabilities, whereby the holders of financial assets, typically presented in the columns of the matrix, are cross-classified with the issuers of the relevant liabilities, typically presented in the rows of the matrix. As in the case of the sequence of economic accounts, for each instrument, total assets equal their corresponding liabilities. The balance sheet matrix may provide FWTW details for selected instruments, such as debt securities and their characteristics (such as currency composition and maturity), but may also relate to the sum of all financial assets and liabilities, or to a certain grouping of financial assets and liabilities which is of particular interest (see table 8.5 in the *MFSMCG 2016*). It is a statement of the financial stocks of sectors as well as the linkages between institutional sectors showing the accumulation of funds having been transferred from surplus to deficit sectors alongside the corresponding financial exposures of sectors to other sectors.

37.12 Table 37.1 provides a basic example of the relationship between issuers (debtors) and holders (creditors) for debt securities, with issuers on the horizontal axis and holders on the vertical axis.

Table 37.1: FWTW table for stocks in debt securities

HOLDERS ---------- ISSUERS	Non-financial corporations	Financial corporations	General government	Households and NPISHs	Total economy	Rest of the world	Total
Non-financial corporations	20	90	10	40	160	40	200
Financial corporations	10	30	10	20	70	30	100
General government	30	100	10	80	220	80	300
Households and NPISHs	0	0	0	0	0	0	
Total economy	60	220	30	140	450	150	600
Rest of the world	30	50	10	10	100		100
Total	90	270	40	150	550	150	700

Financial account matrix

37.13 The financial account matrix is similar to the balance sheet matrix, except that it records transactions in financial assets and liabilities in a certain period of time, broken down by sector and counterparty sector. In this respect, it should be noted that in the sequence of economic accounts financial transactions are recorded following the "transactor approach". For primary market transactions, new issues of tradable securities and purchases of those issues are recorded on a net basis (i.e., gross new issues less redemptions/repurchases). In the case of secondary market transactions, the transactor approach means that transactions in securities are also shown net (i.e., purchases less sales) for each lending/borrowing (sub)sector. Changes in the counterparty (sub)sectors of the issuers are not recorded as financial transactions. This information is useful in identifying how net borrowing sectors finance their deficits and which net lending sectors provide the necessary funds. However, in the case of FWTW matrices, which provide information on the relationships between debtor and creditor sectors, it may be useful to apply the "creditor-debtor approach". According to this approach, changes in the counterparty creditor (sub)sectors due to transactions in the secondary market are also shown as financial transactions in the accounts of the securities' issuers.

37.14 Like the balance sheet matrix, the financial account matrix may be compiled for selected financial instruments, for certain grouping of financial instruments, or for the sum of all financial instruments. For example, table 37.1 above can be constructed for transactions in debt securities, possibly delineating the counterparties of new issues of debt securities from the purchases and sales of outstanding securities. Some countries may also be able to present supplementary information on gross basis, with respect to transactions in securities.

37.15 More generally, it can be noted that while the financial account matrices can provide more immediate information on the counterparty relationships and particularly identify changes in the counterparties, the quality of the available data in the financial account matrices will likely be lower than the quality of the data in the balance sheet matrices which are typically the starting point for compiling financial account matrices.

2. FWTW information in a time series format

37.16 While the matrix presentation is very useful for providing a bird eye's view of the interrelationships between (sub)sectors, analysis often requires a focus on the developments over time of the interrelationships for any given (sub)sector(s) and any given financial instrument. This can be done by re-ordering the information in the FWTW matrices in a time series format, whereby for a certain financial instrument each of the (sub)sectors holding the assets show a breakdown of the (sub) sectors which have issued the relevant financial instrument.

37.17 A FWTW table in time series format presents the inter-sectoral relationships for a given instrument over time. It displays the evolution of selected financial instruments from both the asset and the liability perspective, thus allowing users to analyse the changing patterns in the financing by issuers (debtors) and the related financial exposures of holders (creditors) over time, and also allowing for a deeper understanding of the financial risks and vulnerabilities of a certain (sub)sector or the economy as a whole.

37.18 Table 37.2 is basically a re-arrangement of table 37.1. The time series dimension is presented on the horizontal axis, while holders (creditors) and issuers (debtors) are shown sequentially on the vertical axis.

Table 37.2: FWTW table for stocks in debt securities in a time series format

STOCKS	T	T+1	…	T+n
Held by: Non-financial corporations	**90**			
Issued by: Non-financial corporations	20			
Issued by: Financial corporations	10			
Issued by: General government	30			
Total economy	60			
Issued by: Rest of the world	30			

STOCKS	T	T+1	…	T+n
All issuers	90			
Held by: Financial corporations	**270**			
Issued by: Non-financial corporations	90			
Issued by: Financial corporations	30			
Issued by: General government	100			
Total economy	220			
Issued by: Rest of the world	50			
All issuers	270			
Held by: General government	**40**			
Issued by: Non-financial corporations	10			
Issued by: Financial corporations	10			
Issued by: General government	10			
Total economy	30			
Issued by: Rest of the world	10			
All issuers	40			
Held by: Households and NPISHs	**150**			
Issued by: Non-financial corporations	40			
Issued by: Financial corporations	20			
Issued by: General government	80			
Total economy	140			
Issued by: Rest of the world	10			
All issuers	150			
Held by: Total economy	**550**			
Issued by: Non-financial corporations	160			
Issued by: Financial corporations	70			
Issued by: General government	220			
Total economy	450			
Issued by: Rest of the world	100			
All issuers	550			
Held by: Rest of the world	**150**			
Issued by: Non-financial corporations	40			
Issued by: Financial corporations	30			
Issued by: General government	80			
Total economy	150			
Issued by: Rest of the world				
All issuers	150			
Held by: ALL HOLDERS	**700**			
Issued by: Non-financial corporations	**200**			
Issued by: Financial corporations	**100**			
Issued by: General government	**300**			
Total economy	**600**			

3. Additional considerations on FWTW tables

37.19 Although the FWTW tables presented above show information on the interrelationships between the

main sectors for main categories of financial instruments, they are still aggregated ones that, while useful, may be somewhat limited in their analytical capacity. For example, it may be important to know the long-term and short-term split of debt securities, or to have details on debt securities denominated in domestic currency versus those denominated in foreign currency. It may also be considered useful to have deeper breakdowns of (sub)sectors and counterparty (sub)sectors. As an example, a demand to better understand the impact of non-deposit-taking financial corporations is greatly enhanced by including financial corporations' subsectors in FWTW tables. The level of detail will obviously depend on the availability of the required source data, which is discussed in section C below.

37.20 While the discussion thus far has focused on debt securities, as noted before, FWTW tables can be constructed for any of the financial instruments, either stocks or transactions, source data permitting. However, certain financial instruments such as loans, debt securities and equity tend to feature more prominently in FWTW tables, because they tend to be key sources of lending and borrowing, subject to various types of risks and vulnerabilities and usually a variety of (sub)sectors are involved.

4. Extensions of FWTW tables

37.21 FWTW tables have generally been understood to cover financial stocks and/or financial transactions by instrument, as illustrated by tables 37.1 and 37.2. However, the inclusion of selected components of the current and capital accounts can add to the analytical usefulness of these statistics. Certain components of the current and capital accounts, such as earned income transactions as well as current and capital transfers, lend themselves quite readily to the FWTW table structure.

Earned income transactions - investment income

37.22 Earned income components can also be cast in the FWTW framework, and some countries have adopted a FWTW table approach for investment income. This articulates income associated with financial instruments by issuer (debtor) and holder (creditor) sectors. These can be used for analysis of the flows of interest and dividends by institutional sector and counterparty sector. It can also serve as a tool for data quality purposes, by checking the consistency of financial stocks with related flows of investment income. For example, the relationship between interest or dividend transactions in the current accounts with relevant debt or equity instruments in the balance sheets, together with information on holding gains and losses, can generate average implicit yields that help to interpret the financial stocks of (sub)sectors.

Current transfers

37.23 Revenues and expenditures for current transfers other than social transfers in kind can also be compiled on a FWTW basis. For example, there may be policy or analysis related interest for additional details on current taxes by type, or social contributions and benefits, or the components of other current transfers in terms of which (sub)sectors are paying and receiving. As another example, for employer's pension plans one could combine the FWTW tables for components of investment income, income transfers, financial transactions and stocks, to provide an integrated overview of employer sponsored pensions over a given period of time.

Capital transfers

37.24 It is also possible to construct FWTW tables on receipts and payments for the elements of capital transfers and their sub-components – capital taxes, investment grants, and the various elements of other capital transfers. The latter could include inter-sectoral details on compensation for extensive damages, exceptionally large insurance settlements from natural disasters, etc. (data confidentiality permitting).

5. Cross country tables

37.25 Where stocks and/or transactions with non-residents can be broken down by country and sector, linkages across economies can be better followed. Global FWTW tables (sometimes referred to as global flow of funds analysis) with such detail could highlight the financial relationships across economies. As an example, many country analysts were interested in exposures to US banks during the financial crisis.

However, the data limitations can be significant in developing such tables. See paragraphs 37.47 and 37.48 for a further discussion on the potential to provide cross-country details on a FWTW basis.

6. Quality considerations

37.26 Analysis can be limited by the quality of the estimates on the various sectors, even in the case of aggregated FWTW tables. For example, the split between the bond holdings of households (and NPISHs) and those of non-financial corporations in tables 37.1 and 37.2 above may be based on simple rules of thumb, due to gaps in the source data. In this case, the table may be less useful, although the table still accurately accounts for two-thirds of the holding of debt securities in the financial corporations, government, and the rest of the world, respectively. Alternatively, households (and NPISHs) and non-financial corporations could be grouped together. On the other hand, it may be known with some degree of certainty that the remaining one-third is largely held by the households' sector, so the allocation can be considered as reasonably accurate. In all cases, it is important to provide additional metadata on the quality aspects of the statistics presented.

37.27 Accuracy issues should not necessarily preclude more disaggregated FWTW tables. It is standard practice that compilers use whatever source data are available and ideally include them in the compilation of their financial accounts and balance sheets for institutional sectors, including underlying details such as the FWTW information. If the source data show to be inadequate, or simply missing, for certain financial instruments, one may want to focus on certain financial instruments for which source data are considered of sufficient quality. The next section briefly discusses some source data that are important in the context of financial accounts and balance sheets.

C. Counterpart data and security-by-security databases

1. Introduction

37.28 In the past, compilers relied more heavily on survey and information from regulators and umbrella organizations (e.g., investment fund institutes, central credit unions) to compile the individual pieces of the institutional sector accounts. This resulted in a more than desirable reliance on residual derivation for sectors for which very limited or no direct source information was available. In recent decades various national agencies (e.g., financial institutions' regulator authorities) and international agencies have supported the need to improve the quality of the source data for compiling institutional sector accounts. As an example, the development and increased availability in many countries of monetary and financial statistics as well as government finance statistics have helped complete and standardize financial reporting in many countries. All of these efforts have supported and strengthened statistics in the financial corporations' and general government sectors, both critical sectors in compiling institutional sector accounts, including additional details. In addition, there has been a great deal of development in external sector statistics in many countries, with respect to both financial instrument details on flow stock data.

37.29 The availability and analytical usefulness of FWTW tables is to a significant degree dependent on the availability of more detailed source data, including micro data on, for example, securities. The efforts by many statistical offices and central banks, as well as by international organizations, to compile relevant statistics for monitoring financial risks and vulnerabilities have been facilitated by the further development of databases and related data infrastructure systems in the last decades, such as source data with a greater focus on counterparty sectors and their micro data equivalence of security-by-security databases. In addition, one can observe an increasing availability of source data on additional dimensions, such as the term structure and currency composition, for key financial instruments.

2. Data on counterparty sectors

37.30 Data on counterparty sectors for a few financial instruments can be relatively straightforward. For example, certain types of government savings bonds can only be issued to households. Other counterparty data may come from supplementary information from deposit-taking financial corporations. For example, a deposit liability broken down by counterparty sector from banks may provide high quality FWTW information which can replace lower quality survey data on the holdings of deposits. This may also include a term structure for the deposits and a domestic-foreign currency split. Similarly, loan assets by counterparty sector from financial corporations may provide FWTW information that is superior to

the source data from debtors and may also include details on term structure and currency composition.

37.31 Security-by-security data are compiled by many countries for use in the compilation of financial accounts and balance sheets. Data on new issues of debt and equity securities can be obtained from corporations supporting these markets, such as flotation corporations and exchanges, or from companies that compile and sell this information. Such databases include the new issues of securities, broken down by security, and they usually also include information on the terms and issue rates of the security, the redemption, the current value, the currency of issue, the security identifier number, and other details (in some cases including details on the initial purchaser), etc. In the case of debt securities, the supplementary information may allow for the calculation of market values, revaluations and accrued interest. This high-quality information can replace survey data and provide the sub-instrument detail in FWTW tables for issuers (liability side), such as currency, maturity and interest rate breakdowns.

37.32 In some economies, compilers have been able to augment their security-by-security data by adding information on the asset side, by security, and matching it with the liability side information. Typically, compilers approach large institutional investors and custodians to obtain electronic data on holders' current values for the compilation of balance sheets, as well as purchases and sales of securities for the compilation of financial accounts, from companies that facilitate these transactions such as brokers and exchanges or from companies that compile information on these activities. As with the liability side, this information often comes with additional details on the securities (e.g., security identifier and currency composition). This is a more efficient process than trying to obtain source data via surveys. Given the importance of securities in most economies, this type of databases is quite valuable to compilers and allows for the construction of very detailed FWTW tables on securities to enhance their analytical potential.

37.33 More detailed information on source data, which are particularly relevant for the compilation of financial accounts and balance sheets, including relevant FWTW information, can be found in chapter 7 of the *FPFS*.

D. Uses of FWTW tables

1. Introduction

37.34 More recently, there has been increased interest in financial accounts and balance sheets to detect spillover effects across institutional (sub)sectors, both within the domestic economy and from abroad. The global financial crisis that began in 2007-08 gave prominence to FWTW tables as a supplement to the institutional sector accounts, including more granular information on interlinkages between (sub)sectors and countries in response. FWTW tables can support a more detailed analysis of overall inter-sectoral relationships (e.g., between lenders and borrowers), in addition to providing a detailed representation of financing activities and portfolio shifts across sectors, and an enhanced analysis of selected financial instruments and related markets. Moreover, exposures and potential vulnerabilities may become evident from the information in the FWTW tables. Having information on the inter-sectoral relationships by financial instrument are now deemed essential to analyse and monitor. This type of analysis can also help prepare for adverse economic conditions in one sector or market that might rapidly spread to other sectors and markets and thus affect the economy at large. While in a contagion situation, where economic crises or shocks from one market, country, or financial institution spreads to others, often through interconnected financial systems, transmission effects can be traced with the help of FWTW tables. In addition, in the case of a complete and fully integrated sequence of economic accounts, there is the potential to trace other types of spillover effects more fully (e.g., those that originate from supply or demand shocks, unanticipated price instability for commodities or financial instruments, etc.).

37.35 This section discusses and illustrates some extensions of FWTW tables and describes their applications. It is not intended to be exhaustive. It goes without saying that these derived tables can be customized and paired with other tables, to focus on specific aspects which are important for policy and analysis.

2. Analysis of exchange rate fluctuations and financial adjustments

37.36 FWTW tables on financial transactions, as recorded in the financial accounts, can highlight the transaction-based interrelationships across the institutional sectors of the economy in a certain period of time. These tables provide, for a financial instrument, transactor details on the issuers of liabilities and counterpart holders of assets, including subsequent sales and purchases in these financial instruments,

and thus capture the financing activity across institutional sectors. They can also help assess the reactions of economic agents to different events and provide a leading indicator that can help shed light on the build-up of risk and potential spillover effects across sectors.

37.37 It may be that in a particular period there is an unusual swing in the exchange rate at the outset of a quarter with respect to a major foreign currency in use in the economy. In this example, it is assumed that there is an appreciation of the domestic currency over this foreign currency. A key question might be how economic agents (borrowers as well as lenders) in the economy react to this change. Some indication might be derived from a FWTW table for total loans, however the foreign currency transactions would be partially masked by transactions in domestic currency (which could be partly offsetting). In fact, this demonstrates the need to incorporate currency details in these tables. In this case, it would be useful to construct both a domestic and foreign currency FWTW table for loans, or to incorporate both in the same table. Table 37.3 presents a simplified example of a FWTW table for foreign currency loans.

Table 37.3: FWTW table for financial transactions in loans, foreign currency

HOLDERS ---------- ISSUERS	Non-financial corporations	Financial corporations	General government	Households and NPISHs	Total economy	Rest of the world	Total
Non-financial corporations	10	40	0	0	50	30	80
Financial corporations	0	-10	0	0	-10	20	10
General government	0	10	0	0	10	0	10
Households and NPISHs	0	0	0	0	0	0	0
Total economy	10	40	0	0	50	50	100
Rest of the world	0	0	0	0	0		0
Total	10	40	0	0	50	50	100

37.38 Table 37.3 suggests some developments in the quarter, likely related to the exchange rate fluctuation. Firstly, there has been an increase in loan borrowing in foreign currency at the economy-wide level, concentrated in non-financial corporations which borrowed from financial corporations and non-residents. Secondly, financial corporations also raised funds in foreign currency but shifted borrowing towards non-residents (e.g., loans to non-resident corporations) with a reduction in borrowing from resident financial corporations. And thirdly, non-residents supplied a full half of all new funds raised in foreign currency loans.

37.39 This table could be supplemented by the term structure of those loans, which might shed some light on expectations around the exchange rate. Pairing this table with one on domestic loans would indicate whether total loans are up or down in the quarter or whether there was simply a shift towards foreign currency loans. Other financial instruments' foreign currency tables would add to the understanding of how economic agents in the economy more fully adjusted to the exchange rate movement. In particular, a FWTW table on foreign currency and deposits, or a joint table on deposits and loans, would likely also yield useful information. In addition, for any of these tables it might be useful to include the subsector details for financial corporations, to arrive at a more complete picture of which of these types of institutional units accounted for borrowing abroad. Similarly, a time series presentation as well as corresponding balance sheet tables would add additional context to the adjustments.

3. Analysis of a financial crisis

37.40 Another example concerns the impact of a financial crisis for which the catalyst is largely a sustained and significant housing bubble and a related problem of overextended credit in a mortgage market in a large economy. An analysis of the mortgage market could be supplemented by additional details. For example, the issue of sub-par mortgages could be partially spread through the securitization of mortgages

and the subsequent use of credit default swaps, with adverse effects on the economy. In relatively short order, the crisis could spread to other economies and take on different forms. Detailed FWTW tables could shed some insight in this context.

37.41 To focus on one angle of such a crisis, it could be useful to not just monitor the growth in securitization but to also understand who was holding the potentially compromised mortgage-backed securities, how their positions changed over time, and whether the predominance of the activity was in long-term or short-term securities relative to the securitized assets. In other words, one may want to have available FWTW tables for components of the debt securities included in tables 37.1 and 37.2, by breaking down short-term and longer-term asset-backed securities with as much (sub)sector detail as possible. This could be paired with other FWTW tables tied to the mortgage market and different financial instruments tied to liquidity (in the case of a credit crunch). In table 37.4, it is assumed that long-term asset-backed securities (ABS) are dominated by mortgage-backed securities (MBS). MBS may be available as a subcomponent of ABS. On the other hand, short-term securities may be dominated by personal loans (including credit cards) and other short-term loans as indicated by the asset composition of the issuing sector. In table 37.4, the FWTW table compares the issuers of ABS in the subsector other financial intermediaries except insurance corporations and pension funds to the holdings of ABS, broken down by term structure of the securities.

Table 37.4: FWTW table for stocks in asset-backed debt securities, by term structure

STOCKS	**T**	**T+1**	**T+2**	**…**	**T+n**
Issued by: other financial intermediaries, short-term	50	60	90		
Issued by: other financial intermediaries, long-term	100	140	210		
Held by: Deposit-taking corporations, short-term	10	10	15		
Held by: Deposit-taking corporations, long-term	20	25	35		
Held by: Money market funds (MMFs), short-term	2	7	7		
Held by: Money market funds (MMFs), long-term	0	0	0		
Held by: Non-MMF investment funds, short-term	0	0	0		
Held by: Non-MMF investment funds, long-term	20	25	35		
Held by: Other financial intermediaries, short-term	10	10	20		
Held by: Other financial intermediaries, long-term	10	15	25		
Held by: Insurance corporations, short-term	2	2	2		
Held by: Insurance corporations, long-term	15	15	20		
Held by: Pension funds, short-term	14	19	29		
Held by: Pension funds, long-term	25	35	55		
Held by: General government, short-term	0	0	0		
Held by: General government, long-term	5	5	10		
Held by: Households, short-term	2	2	2		
Held by: Households, long-term	5	5	10		
Held by: Other domestic sectors, short-term	0	0	0		
Held by: Other domestic sectors, long-term	0	0	0		
Held by: Total economy, short-term	40	50	75		
Held by Total economy, long-term	100	125	190		
Held by: Rest of the world, short-term	10	10	15		
Held by Rest of the world, long-term		15	20		
Total, short-term	50	60	90		
Total, long-term	100	140	210		

37.42 Table 37.4 suggests some interesting developments. Firstly, it shows a sharp increase in ABS outstanding over three time periods, with the bulk of the growth in long-term securities. What share of these new

ABS is related to sub-par mortgages (future non-performing loans) is unknown, but it is likely that some of the problems in the mortgage market are reflected in the notable increase in ABS thus transmitting increased risk to investors. The table also shows that all investors have increased their holding of ABS. Pension funds more than doubled their investment, to become the largest domestic investor in ABS. Investment funds have also increased their exposure, and it is possible that doubling of the holdings by other financial intermediaries reflects issues of ABS that have not yet been picked up by other investors. Another possible interesting development shown in the table is the growth in short-term ABS, and the question of whether some of these are backed by longer-term assets (in this case securitized mortgages) leading to a maturity mismatch within the subsector. Lastly, non-residents have significantly increased their holdings of ABS, especially in period T+2, possibly leading to a situation where some of the domestic mortgage market problems have been transmitted abroad.

4. Analysis of interest rate fluctuations on investment income

37.43 For analytical purposes, the interest component of property income might be useful to focus on. For example, there can be a user demand in following, during a period of interest rate fluctuations, the transactions in various interest-bearing instruments on both the expenditure and revenue side in relation to the (sub)sectors receiving and paying interest. In this case, one might be interested in FWTW tables for interest transactions in deposits, loans and debt securities, possibly by term structure (one such split being between demand deposits and time deposits). Table 37.5 presents interest flows (receipts and payments) on deposits offered by domestic deposit-taking corporations, by sector, by type, and over time (assuming quarterly time periods). Such a table might be constructed in the event of a sharp increase in short-term interest rates in period t+2, which may or may not be sustained.

Table 37.5: FWTW table for interest on deposits

	T	T+1	T+2	…	T+n
Paid by: Deposit-taking corporations on demand deposits	70	80	80		
Paid by: Deposit-taking corporations on time deposits	100	109	114		
Received by: Financial corporations on demand deposits	5	6	6		
Received by: Financial corporations on time deposits	10	12	12		
Received by: General government on demand deposits	5	7	7		
Received by: General government on time deposits	0	0	0		
Received by: Households and NPISHs on demand deposits	40	44	44		
Held by: Households and NPISHs on time deposits	60	64	69		
Received by: Non-financial corporations on demand deposits	10	12	12		
Received by: Non-financial corporations on time deposits	20	22	22		
Received by: Total economy on demand deposits	60	69	69		
Received by Total economy on time deposits	70	98	103		
Received by: Rest of the world on demand deposits	10	11	11		
Received by Rest of the world on time deposits	10	11	11		
Total interest on demand deposits	70	80	80		
Total interest on time deposits	100	109	114		

37.44 Table 37.5 shows deposit-taking corporations increasing their interest payments in t+1, reflected in higher receipts by almost all holders' sectors. The limited increases in period t+2 suggest that the short-term rates remained at their higher level with some additional term deposits coming due and receiving a higher return. This analysis could be partnered with an accompanying FWTW table on demand versus term deposits, in order to identify the role that any portfolio shifts may have played in the interest income changes.

37.45 More generally, a FWTW table for interest flows can be combined with a FWTW tables on interest bearing instruments for different instruments. The tables can then be combined to estimate the implicit

yields in interest-bearing instruments (e.g., interest received by type of instrument over instrument holdings), though one may wish to add back the implicit financial services on loans and deposits component on deposits and loans for this exercise. The overall return on an instrument can be thought of as the property income and holding gains or losses. Holding gains and losses from the revaluation account can also be presented in a FWTW dimension. These might be used, by combining holding gains on debt and equity instruments with (sub)sector holdings to calculate a different type of implicit yield.

37.46 There are other examples of complementary FWTW tables that can be used for purposes of policy and analysis. For example, FWTW tables on financial stocks and flows can be analysed in conjunction with each other for an expanded perspective on financing and its effects. A detailed sequence of accumulation accounts FWTW table can also be constructed (for any given financial instrument or the total of financial instruments) that incorporates stocks and all flows (i.e., financial transactions, revaluations and other changes in volume), by sector of issuer (on the vertical scale) and sectors of holders (on the horizontal scale). There might also be an interest in analysing holding gains and losses on financial instruments in conjunction with taxes on holding gains.

5. Cross-country analysis

37.47 For any given financial instrument, with debt securities being the most likely candidate, it may be possible to construct a cross-country or global FWTW table, with varying degrees of detail. Table 37.6 displays the possibilities for countries A, B, C, and D, where good quality bilateral data allow for such a more detailed analysis. It may also be possible to include some or all of the sector details, by country, data sources permitting. Such a table would clearly show the global and sectoral interconnections related to this instrument. The IMF has undertaken related work with respect to certain financial instruments (e.g., the *coordinated portfolio investment survey (CPIS)*), and some of these are more likely to be broken down by sector. There have also been proposals and initiatives with respect to international exchanges of data for securities.

Table 37.6: Financial instrument holdings and outstanding issues by country

HOLDERS ---------- ISSUERS	**Country A, by sector**	**Country B, by sector**	**Country C, by sector**	**Country D, by sector**	**Other countries, by sector**	**Total**
Country A, by sector						
Country B, by sector						
Country C, by sector						
Country D, by sector						
Other countries, by sector						
Total						

37.48 More generally, it may be possible to construct a global FWTW table across certain countries for the net international investment position (net IIP), assuming that some or all of the supporting key sub-instrument details and the required geographical data are available. The analysis can be enhanced for selected countries that have broken down their IIP assets and liabilities by institutional sector. Such a table would show how the sectors in these economies are related to each other. However, the source data demands are quite significant for such an endeavour, given that it may not possible to break down all international assets and liabilities by sector and by geographical region. Nevertheless, such a table would be possible to be compiled for countries with good bilateral/multilateral data, supplemented by other sources of data and some degree of estimation.

E. Related financial indicators

1. Introduction

37.49 This section underlines the usefulness of a framework that can help assess the financial health of individual sectors and subsectors, and touches on some existing and newer approaches in this area. FWTW information may add to the analytical usefulness of such indicators, by providing granular information that allows for the tracing of debtor-creditor relationships among institutional sectors.

2. The balance sheet approach to financial stability

37.50 Interest in balance sheet data as a means to detect financial risks and vulnerabilities post-financial crisis is alluded to in the above. It is also evident in some of the updated data frameworks, including work undertaken at the IMF in the *MFS* domain, that focusses on the assets and liabilities of financial corporations, and the IMF's Financial Soundness Indicators. This also concerns the Balance Sheet Approach to Financial Stability developed by the IMF (see e.g., *A Balance Sheet Approach to Financial Crisis, 2002*; and *Balance Sheet Analysis in Fund Surveillance, 2015*), which is an analytical framework for understanding financial crises in emerging markets based on an examination of various financial asset and/or liability stock variables for the main sectors of the economy as well as for the balance sheet of the economy as a whole. This effort also applies to developed economies, many of which have made use of similar indicators for some time, but usually not as systematically as in the balance sheet approach. The approach basically augments the longer-standing analysis which mainly focused on flow variables (e.g., current account, fiscal balance) or on aggregated indicators.

37.51 The balance sheet approach helps to highlight how balance sheet problems in one sector can spill over into other sectors. Sectoral balance sheets can help analysts evaluate the trade-offs between different policy objectives that arise after sectoral problems may have expanded into a systemic threat to the financial and economic system. Some financial crises occur from a gradual build-up of risk in certain sectors (endogenous factors), while others are precipitated or exacerbated by adjustments in portfolios from an initial shock (exogenous factors). In all cases, timely balance sheet statistics can help shed light on potential vulnerabilities.

37.52 Specifically, the balance sheet approach assesses the balance sheet of an economy's main sectors, for maturity, currency and capital structure mismatches as well as solvency issues. When such problems arise, these are not typically confined to the original sectors or instruments, and each can be further analysed in the context of specific FWTW tables. The following main mismatches can be distinguished:

- "Maturity mismatches" can occur in instances where there is a large gap between liabilities due in the short term and liquid assets, which can leave a sector or subsector unable to meet its (short-term) contractual commitments on debt. This can occur if the refinancing of short-term debt is problematic, such as temporarily not possible or demanding a higher return for the refinancing. This is also known more broadly as liquidity risk. FWTW tables can identify the potentially vulnerable counterparty holders of the short-term debt.
- "Currency mismatches" can occur in a situation where liabilities are primarily denominated in foreign currency, while financial assets are largely in domestic currency. This can create an ongoing problem in terms of principal and interest payments on debt, which can be exacerbated by an exchange rate depreciation of domestic currency. Alternatively, in a situation where financial assets are largely stated in foreign currency relative to assets, a capital loss can occur if the foreign currency depreciates relative to the domestic currency resulting in a different type of potential debt service issue. FWTW tables on foreign debt (e.g., loans and securities) can shed light on the counterparties at risk.
- "Capital structure issues" cover instances where there is a relatively heavy reliance on debt (e.g., in the non-financial corporations' sector) as opposed to equity financing, which can result in a situation that is untenable in the face of a sharp or sustained drop in income. This is also referred to as assessing a firm's leverage and is measured by its debt-to-equity ratio. In such a scenario, FWTW tables can display the counterparties that are exposed to the debt.
- "Solvency issues" cover instances where current financial assets and expected future revenue streams are insufficient to cover the liabilities, including any contingent liabilities. This situation can occur due to sustained weak income performance and/or a gradual build-up of debt, or it can arise in conjunction with some of the other situations described above.

37.53 The analysis above can be augmented by combining key indicators related to currency and maturity characteristics for relevant financial instruments, such as deposits, loans, and debt securities in FWTW tables. As an example, it may be possible to construct a FWTW table for stocks of debt securities (such as table 37.1) of resident issuers and holders, by sector, as well as the rest of the world, with currency and maturity details. As another example, a FWTW table could be constructed for stocks of foreign debt securities with currency and maturity details for resident holders by institutional sector relying mainly on data from the *coordinated portfolio investment statistics (CPIS)*. At the limit, it might be possible to extend table 37.6 by adding maturity and currency details for selected countries and instruments, provided that quality bilateral data are available.

3. Some other financial indicators

37.54 There are indicators which may complement the balance sheet approach discussed above:

- For corporations, expanding on maturity mismatches, a current ratio can be calculated as short-term assets to short-term liabilities, as a measure of the ability meeting current obligations. This measure usually excludes accounts receivable/payable and can also exclude inventories. Tobin's Q can be calculated as the ratio of the market value of equity to its own funds at book value, and is indicative of any premium of discount that investors have assigned to corporate shares.
- For all sectors of the economy, the leverage calculation can be applied as the sum of debt liabilities relative to net worth or financial net worth.
- For all sectors of the economy, a further liquidity indicator that can be applied to all sectors is the ratio of short-term debt to long-term debt, which is used to assess the degree of, and possible risk associated with, a sustained shift towards shorter-term debt. The composition, and changes in the composition, of assets-liabilities by institutional sector and subsector is important for monitoring structural changes and preferences with respect to liquidity and risk. As a more detailed supplement to this exercise, FWTW tables as presented in tables 37.1 and 37.2, can be compiled in percentage form for any given financial instrument.

37.55 There are also a series of ratios that use balance sheet and other data to measure and monitor issues associated with financial stability.

- For corporations, the performance ratio is the measure of saving or undistributed earnings to equity (own funds at book value), which compares earnings to shareholders' investment. For non-financial corporations the return ratio compares net operating surplus to non-financial assets.
- For all sectors of the economy, the ratio of interest (and possibly principal) payments to debt – the debt service ratio – is a useful supplement to leverage measures.
- The internal to external sources of funds ratio provides an indication of the funds borrowed or raised externally to saving or sales of financial assets. The ratio of saving or net lending to GDP/GNI is a broad indication of the sector's role in providing funds for its own financing or for other sectors of the economy. All of these indicators can change significantly during periods of economic stress.
- For general government, gross debt to GDP/GNI ratios have been in use for a long time for various purposes (e.g., debt sustainability, the ability for fiscal stimulus, etc.). Here, one may also consider ratios based on gross debt adjusted for certain financial assets owned by government. These measures can be enhanced by further breakdowns of government debt in selected FWTW tables.

Chapter 38: Thematic and Extended Accounts

A. Introduction

38.1 The integrated framework of the SNA is a fully integrated and internally coherent system, and it provides a relatively limited amount of disaggregation in order to present an uncluttered view of the major macroeconomic aggregates. Yet answering the broad range of relevant questions about economic activities and phenomena often requires multiple perspectives and the sort of detailed disaggregations that would overburden the integrated framework of national accounts. Demands therefore frequently arise for further data that will permit deeper insight into economic activities or phenomena of special interest or importance and show the broader context.

38.2 Thematic and extended accounts (formerly known as satellite accounts) are flexible tools for increasing the visibility of key phenomena by bringing all the pertinent data together in one place, and by presenting further disaggregation, alternative aggregations and approaches, and broader context while maintaining coherence with the overall conceptual framework of the SNA. They can also be a place where experimental methods are tested. Complementary and experimental data may also be presented in a supplementary table or account rather than a fully elaborated thematic or extended account in cases of topics that can be covered in a single table or account of limited scope. The positions of supplementary tables or accounts, thematic accounts and extended accounts in the taxonomy of the SNA are shown in chapter 21 on Communicating and disseminating macroeconomic statistics, box 21.4.

38.3 Thematic and extended accounts are linked to, but distinct from, the integrated framework of national accounts. Their links to the integrated framework enable thematic and extended accounts to inherit the rigour of the SNA, including its definitions for concepts such as production, consumption, income, and assets, and its framework for ensuring the consistency of the estimates with each other and with higher level aggregates. For example, as part of ensuring this consistency, compilation of a thematic account may include balancing the supply and use of the products included in the key activity of interest. The link to the integrated framework also allows these accounts to show the economic significance of the items they cover through meaningful comparisons to macroeconomic aggregates such as GDP/NDP, gross value added, and international trade in goods and services.

38.4 One of the strengths of the SNA is its flexibility, and this flexibility extends to the choice of topics for thematic or extended accounts. The economy's structure and growth pattern, the key policy issues, and data availability are factors to consider in identifying the themes that would be appropriate to cover in a thematic or extended account. Nevertheless, the compilation of certain thematic or extended accounts is encouraged to fill important information gaps on aspects of well-being and sustainability. These include, amongst others, the thematic account on the digital economy (discussed in chapter 22 on Digitalisation), and the thematic and extended accounts on household unpaid service work, health, education and training, and human capital (discussed in chapter 34 on Measuring well-being and chapter 35 on Measuring the sustainability of well-being). In addition, tables analysing inequality by disaggregating household income, consumption, and wealth (discussed in chapter 32 on Households) are part of the integrated framework of national accounts, and as such part of the recommended data dissemination on the household sector.

38.5 This chapter explains the roles of thematic accounts and extended accounts in dissemination of macroeconomic statistics and provides general guidelines for compiling a thematic account. The purposes and scope of thematic and extended accounts are explained in section B. Section C provides an overview of the main tools for developing a thematic account, including supply and use tables. Section D explains the steps in developing a thematic account on a key activity in the framework of supply and use tables, which include disaggregation of the relevant elements of the supply and use tables, complementing the information provided in those tables with physical indicators, and, possibly, extending the production boundary to bring visibility to goods and services produced for own consumption. This section concludes with a discussion of the conditions that allow compilation of the measures derived further down in the sequence of economic accounts on institutional sectors, which include the income, saving, capital formation and balance sheets of the key activity.

B. Relation between thematic accounts and extended accounts

38.6 Both thematic and extended accounts provide complementary data that allow insight into a key activity or aspect of the economy that lacks visibility in the integrated framework of national accounts, but they differ in their relationship to those accounts. Thematic accounts disaggregate and rearrange the items in the integrated framework of the SNA, while extended accounts expand, or look beyond, the boundaries applied in the integrated framework, to give a different perspective or a more comprehensive view of a phenomenon and its broader context. However, to provide the full picture or the broader context, it may also be necessary to add items beyond the standard SNA boundaries to a thematic account, and it is common to include items providing further detail on measures in the standard sequence of accounts as part of an extended account. Whether an account containing both thematic account and extended account elements is considered a thematic account or an extended account is determined by its focus. If, for example, measures of imputed monetary values of services or externalities beyond the production boundary applied in the integrated framework of the SNA are the focus, the account is typically referred to as an extended account. This also holds if the focus is on measures that extend the asset boundary applied in the integrated framework. Compilation of both thematic and extended accounts could involve the use of experimental methodologies.

Thematic accounts

38.7 Analytically important items for understanding the key activity or phenomenon that is the focus of a thematic account are often invisible in the integrated framework of national accounts because they are subsumed in broader aggregates or are implicit components of transactions estimated at a higher level of aggregation. Thematic accounts increase the visibility of such items by compiling more granular decompositions and by compiling alternative aggregations that summarize the relevant granular data. These alternative aggregations may, for example, introduce a different treatment of ancillary activities in which the elements of the standard framework of national accounts are rearranged without altering the boundaries of the underlying concepts.

38.8 Most thematic accounts cover a key activity, which is an activity that is of high economic importance or of special interest for policymaking or other purposes. To provide a complete view, the key activity must often be defined broadly enough to include segments of several of the industries defined in the classification system used for the standard supply and use tables (such as *ISIC*). The boundary of the key activity may therefore encompass detailed industries or industry segments from different sections and divisions of the standard classification system, in effect rearranging that system. A thematic account may also analyse a key phenomenon covered by the integrated framework of national accounts in more detail by providing additional breakdowns and alternative aggregations. Information on other related activities may also be provided as part of showing the impact or broader context of the key activity or phenomenon – for example, a thematic account on the digital economy may provide information on the producers that use digital intermediation platforms to sell their (non-digital) output.

38.9 Tourism accounts are an example of widely compiled thematic account. Accounts for health as well as accounts for education and training (discussed in chapter 34 on Measuring well-being) are also widely compiled as thematic accounts. Other common topics for thematic accounts are agriculture, culture, sports and recreation, transport, and social protection. Finally, the profound impact of digitalization has made the digital economy a frequent theme for the work on new types of thematic accounts; see chapter 22 on Digitalisation for a discussion of these accounts.

Extended accounts

38.10 A different perspective or a more comprehensive view can provide important context for the standard SNA indicators, and cover aspects of, for example, well-being and sustainability and of production, income and wealth that are beyond the scope of the integrated framework of national accounts. Extended accounts present concepts that expand or modify the integrated framework's boundaries of production, consumption, investment, income, assets, and wealth, and indicators that concern phenomena beyond these boundaries.

38.11 Extended accounts often include imputed values for indicators measured in monetary units and/or non-monetary indicators measured in physical units. Expanding the boundaries applied in the integrated framework of national accounts usually requires imputing a monetary value for goods, services, or assets that are not sold in markets, or estimating a monetary value for externalities. This imputation may, for example, be based on actual or inferred costs of production, observed market prices of related products, the present value of expected future (economic) benefits, or the value of the harm to health or the environment caused by an externality.

38.12 Areas in which extended accounts can fill information gaps include unpaid household service work, education and human capital, health, and free digital services. Unpaid household service work, including volunteering, is a frequent theme for an extended account (see chapter 34 on Measuring well-being). Extended accounts for education and human capital may also expand the production boundary to include unpaid household production of educational services and expand the asset boundary to include income-based and cost-based measures of human capital (see chapter 35 on Measuring the sustainability of well-being). Similarly, the accounts on health care may expand the production boundary to include unpaid household production of health care and long-term social care (see chapter 34). Finally, an extended account could impute direct household consumption of free services of digital platform (see chapter 22 on Digitalisation).

38.13 Although monetary measures of stocks and depletion of natural resources are included in the integrated framework of the SNA, addressing concerns about sustainability is another area where complementary systems provide a multitude of additional data. The SEEA describes a complementary system of accounts that includes both thematic and extended accounts as defined in this chapter. The SEEA provides two related sets of statistical standards to guide the collection, organization, and presentation of the data needed for the analysis of environmental aspects of sustainability. First, the *SEEA Central Framework* provides a framework for producing environmental-economic accounts in physical and monetary units on natural resource stocks and flows, natural resource inputs to the economy and on impacts of the economy on the environment and expenditures to mitigate these impacts. Second, *SEEA Ecosystem Accounting* extends the asset and production boundaries applied in the integrated framework of the SNA, to recognize and account for ecosystem assets and the services derived from these assets in physical and monetary terms. The close relationship of the SEEA to the SNA and the use of its key components to assess sustainability are discussed in chapter 35 on Measuring the sustainability of well-being.

38.14 When an extended account expands or modifies the SNA integrated framework's boundaries of production, consumption, or assets, it must remain internally consistent. Therefore, expanded definitions of production, income, and expenditures must maintain the accounting identities between production and income from production and between total supply and total use of a product. Furthermore, the terminology used in the extended account should clearly distinguish the alternative and expanded concepts from the concepts applied in the integrated framework of the SNA.

C. Tools for developing a thematic account

38.15 Combining the data from the integrated framework of national accounts with more detailed data from the supply and use tables and other sources of information will enable deeper insight into the key activity or phenomenon being analysed in the thematic account. In addition, alternative aggregations based on alternative approaches to classification can aid in the analysis of the key activity or phenomenon. One of the steps in planning and designing a thematic account should therefore be to identify the external data sources and alternative classifications that can help enhance the scope or depth of the analysis of the key activity or phenomenon of interest.

38.16 This section discusses commonly used resources for compiling a thematic account on a key activity. Supply and use tables are considered first, as they are typically used as a starting point for having more detailed breakdowns and can provide an organising framework for the data. External data sources are discussed next. Last, this section discusses the use of alternative approaches for classifying and aggregating the data used to compile a thematic account.

1. Supply and use tables

38.17 Although disaggregation of the production and generation of earned income accounts of the relevant institutional sector (or sectors) can provide valuable insights into the key activity featured in a thematic account, the organizing framework and wealth of information provided by supply and use tables (discussed in chapter 15) will allow a much more complete and comprehensive description of the theme being addressed. For example, data on who consumes the key activity's output can be provided by drawing on the information presented in the use table. Furthermore, the key activity's linkages with the rest of the economy can also be derived from the use table and used to estimate the indirect impact of an increase in its output of goods and services. Compiling the thematic account in the framework of supply and use tables will also help ensure its accuracy and its consistency with the rest of the accounts. (An example of deriving data that can be used to compile a thematic account by breaking out digital transactions, products and industries in extended supply and use tables is discussed in section F of chapter 22 on Digitalisation.)

38.18 As illustrated in the simplified example of extending the supply and use tables discussed in section D below, a supply table breaks out the domestic sources of supply of every product by industry. Its columns contain industries, and its rows contain products, with an industry's output of a product valued at basic prices. The supply table also contains columns showing imports, taxes less subsidies on products, trade and transport margins, and the total supply of each product at purchaser's prices. The total supply of a product at purchaser's prices is conceptually identical to the total of the uses of the product, and a process of balancing the supply and use tables ensures that this identity is satisfied in practice.

38.19 The use table breaks out each industry's intermediate consumption of a product, with additional columns showing the final consumption expenditures on the various products broken out by each institutional sector, gross capital formation, exports, and the total uses of the product. The bottom section of the use table shows industries' total intermediate consumption, value added and output, along with a decomposition of value added that includes remuneration of employees, other taxes less subsidies on production, depreciation and depletion, net operating surplus, and net mixed income. Additional rows show total output, labour inputs as measured by hours worked, and gross fixed capital formation.

2. Alternative aggregations

38.20 Alternative aggregations are a key tool for analysing a phenomenon or activity that lacks visibility in the integrated framework of national accounts. In an alternative aggregation, the items contained in the standard aggregates are reclassified in a way that brings the key phenomenon or activity into focus. The rows and columns of the supply and use tables follow the standard product and industry classifications (*CPC* and *ISIC*) at similar levels of their respective hierarchies. It can be quite instructive to bring together a set of detailed expenditures with a common purpose, or a set of detailed activities involved in the production of a key type of product. For example, if the objective is to analyse the impact of oil and natural gas on the economy, the thematic account may contain the industries of extraction of crude petroleum and natural gas, manufacture of refined petroleum products, transport via pipelines, wholesale of solid, liquid and gaseous fuels and related products and retail sale of automobile fuel. Depending on local circumstances, it may also be useful to include petrochemical processing.

38.21 Many thematic accounts group together a select set of detailed industries of special interest or importance to the economy. Such special groups of selected industries are commonly referred to as a "key activity", "key sector", or just "sector". (However, this use of the term "sector" can cause confusion, as "sector" is typically used as a way of referring to an institutional sector in the integrated framework of the SNA.) For example, a key activity containing the industries with critical roles in the economy's external transactions might be useful to track. Another example of a key activity is the group of industries that produce, transport, and sell oil and gas products discussed above.

38.22 The detailed industries and products that are grouped together to form a key activity often come from different sections of the standard industry classification and standard product classification. For example, a special aggregation might be developed to allow insight into an emerging new technology or business model that cuts across the standard industry or product boundaries. The key activity might be narrowly specified, such as a particular agricultural crop or mineral, or it might be relatively broad, such as all the goods and services

primarily serving tourism. In either case, special supply and use tables may be compiled that concentrate on the key activity and summarize the other industries or products in broadly defined aggregates. If the key activity comprises a discrete set of enterprises for which income statement and balance sheet data are available (see paragraphs 38.43 and 38.44), a complete sequence of economic accounts for the key activity may also be compiled.

38.23 Classifications based on the purpose of the expenditure can also be used for the alternative aggregations. Detailed expenditures identified as having a common purpose in the four functional classifications of the SNA (see Annex 2 on functional classifications), may be reassembled into cross-cutting aggregates of analytical interest. For example, the SNA functional classifications identify the expenditures on education incurred by households, government, non-profit institutions serving households (NPISHs) and market producers that could be part of a cost-based measure of human capital. A reclassification of the goods identified as durables in the *COICOP* as gross capital formation is another example.

38.24 A thematic (or extended) account may provide more than one type of alternative aggregation. The classifications that define the alternative aggregations of products, activities or transactions may be based on any of five dimensions: (i) the purpose of the expenditure; (ii) the characteristics of the product; (iii) who the user of the good or service is (e.g., resident and non-resident visitors in a tourism account); (iv) who the producer is (e.g., household non-market producers or informal unincorporated household market enterprises); or (v) the characteristics of the transaction (e.g., digitally ordered). Special aggregations of products in a key activity thematic account may include relevant secondary or ancillary outputs of industries whose primary product is out-of-scope.

3. Additional external source data

38.25 Constructing the relevant aggregates for the key activity that is the focus of the thematic account often requires further decomposition of the industries and products shown in the standard supply and use tables. Additional source data, such as an economic census or government or companies' administrative records or private data on electronic transactions, may be consulted to develop these further breakdowns. When drawing on alternative data sources, the differences in coverage, timing, and estimation methods between the additional source data and the integrated set of data in the supply and use tables must be taken into account. Supply and use tables often incorporate adjustments to ensure exhaustiveness (such as adding an estimate of the informal activity), to correct for differences in timing, and to balance the supply and use of the product.

D. Developing a thematic account on a key activity

38.26 Most thematic accounts concern a key activity. An organizing framework based on supply and use tables will help ensure that the thematic account on the key activity is consistent with the integrated framework of national accounts and provides a complete analysis of the key activity. Compiling a thematic account in a supply and use table framework involves a series of steps. These steps disaggregate the relevant elements of the supply and use tables, develop complementary indicators giving additional perspectives on the key activity, and add information on the broader context by expanding the production and asset boundaries applied in the integrated framework of the SNA. In some cases, it may also be possible to add information on revenues and expenditures beyond those arising from transactions in goods and services, and on financial assets and liabilities.

38.27 The process of developing a thematic account on a key activity can be divided into a planning phase and a compilation phase. This section first discusses the planning phase. It then discusses the steps to compile a thematic account on a key activity drawing on the standard supply and use tables in combination with other source data. Although a complete analysis of the key activity would include all the steps and indicators described in this section, in some cases the circumstances may not call for all of them to be included to enable the users of the thematic account to understand the role of the key activity in the domestic economy and analyse the policymaking concerns related to the key activity.

38.28 Additional information on compiling certain specific types of thematic accounts or the items that go into these accounts can be found in specialized handbooks and manuals such as, for example, the international

handbooks on accounts on tourism (see *Tourism Satellite Accounts: Recommended Methodological Framework*, and on non-profit institutions and volunteering (see *UN Handbook on National Accounting: Satellite Account on Non-profit and Related Institutions and Volunteer Work*. Other examples of compilation guidance on specific themes are the *OECD Handbook on Compiling Digital Supply and Use Tables* and the *OECD Handbook on Measuring the Space Economy.*

1. The planning phase: defining what is to be measured

38.29 Developing a precise definition of what is to be measured before beginning the compilation process will help guide the compilation process and help avoid inconsistencies and omissions. A precise definition of the measurement objective can also clarify the interpretation of the results. If the thematic account concerns a key activity, the boundary of the key activity must therefore be specified precisely enough to guide the data gathering and compilation processes. If left undefined, questions can easily arise about the boundary of a key activity that brings together detailed industries and products from different parts of the standard classification system.

2. Steps to compile thematic supply and use tables, with transport as an example

38.30 Compiling a complete thematic account for a key activity in a framework of supply and use tables requires steps to further disaggregate the relevant elements of these tables and steps to complement the information they provide with other monetary or physical indicators. For example, the further disaggregation in a thematic account on transport might distinguish different modes of transport, different types of passengers and freight, and public and private transport, and analyse physical indicators of cargo and passengers transported and of labour input in the transport industry. It may also be appropriate to further complement the data in the supply and use tables with measures that extend the production boundary applied in the integrated framework of the SNA, or account for environmental externalities. (As noted above, a thematic account can contain extended measures provided as supplementary information.)

Disaggregating the relevant elements of the supply and use tables

38.31 The first series of steps in compiling a thematic account based on supply and use tables involves disaggregation. Items in the supply and use tables must be disaggregated as required to analyse the detailed components of the key activity and to allow construction of aggregate measures composed of the detailed industries (or detailed products) included in the key activity. In addition to using the disaggregated data to present further analytical detail, aggregate measures of the key activity that combine the relevant detailed industries or detailed products, including those that require disaggregation to identify, should be compiled.

38.32 The disaggregated information on items in the supply and use tables should include further breakouts of the relevant industries, products, taxes and subsidies on products, and components of value added. Taking breakouts that could be included in a transport account as examples, the decompositions of the relevant elements of the standard supply and use tables needed to analyse the key activity may be compiled as follows:

a) Identify the industry columns of the supply and use tables that are within the bounds, or partly within the bounds, of the key activity and disaggregate these columns as needed for expositional and analytical purposes. For example, in the case of a transport account, the breakouts might distinguish public and private suppliers of land transport, passenger transport, and other services. In cases of columns that straddle the boundary of the key activity, the detailed industries that are within the scope of the key activity must be distinguished from the other detailed industries with which they have been combined so that the in-scope components can be included in the aggregated measures of the key activity, such as measures of its scale.

b) Disaggregate the rows of the supply and use tables that cover the key products produced by, or used in, the key activity, including the relevant parts of rows that straddle the product boundary of the key activity. In a transport account, the detailed products might include the different modes of transport of passengers and freight. The disaggregation of the supply and use of a product might also distinguish

different types of buyers (e.g., foreign and domestic air travel passengers) or types of transactions (e.g., the digital transactions of the digital economy thematic account).

c) Break out the taxes and subsidies on the relevant products. The use table measures the uses of products at purchaser's prices, which include taxes on products and exclude subsidies on products, while the supply table measures industry output at basic prices, which include subsidies on products and exclude taxes on products. Breakouts of the taxes embedded in the relevant rows of the use table and the subsidies embedded in the relevant rows of the supply table can be quite instructive in cases of products that are highly taxed or highly subsidized. In a transport account, for example, the subsidies on public transport and the taxes on different fuels may be substantial.

d) For the industries included in the key activity, compile further breakouts of value added. The standard use table decomposes value added into (i) remuneration of employees, (ii) other taxes less subsidies on production and imports, (iii) depreciation and depletion, (iv) net operating surplus, and (v) net mixed income. A further decomposition of value added might include a split of remuneration of employees into wages and salaries and social contributions as a way of identifying industries where low social contributions reflect a predominance of informal employment. In the case of a transport account, a further breakout of other taxes less subsidies on production may reveal important sources of government revenue from taxes on land and structures, taxes on the use of equipment, and licensing fees.

Introducing complementary indicators

38.33 The next steps are to complement the measures presented in the standard or disaggregated supply and use tables with indicators that provide additional detail or context. The first set of indicators to compile includes the gross and net fixed capital formation and the closing stocks of fixed capital of the establishments included in the key activity. Second, physical indicators of production and consumption that help analyse the performance and condition of the industries that make up the key activity should be compiled. For example, a transport account might report physical data on passenger-kilometres and freight tonnage in conjunction with monetary data on these services. The data on values at current prices may also be complemented with price and volume data. Comparing the growth of the totals of physical quantities with the growth of a comparable volume index calculated by deflating with a price index will allow insight into the change in the mix of services being supplied – for example, a shift towards higher-priced routes (e.g., due to improved quality) would increase the relative growth rate of the volume index for freight transport services.

38.34 Third, the complementary indicators of labour input needed to analyse the key activity's impact on labour should be compiled. The labour indicators could disaggregate the data on hours worked in the bottom section of the use table by detailed industry and provide totals for the key activity and the suppliers of the products it uses. The data in the use table on remuneration of employees and hours worked can also be complemented with data on the number of jobs or the size of the workforce employed in the key activity. For example, the usefulness of an account on transport might be enhanced by adding data on the composition of workforce employed in transport activities by occupation and gender or by the type of employment arrangement, including work intermediated by a digital platform.

38.35 The indicators of production may also be complemented by physical indicators of the environmental impacts of the key activity, such as quantities of pollutants and greenhouse gases emitted. For example, a transport account could include complementary indicators on the emissions generated by transport activities of enterprises and households.

3. Extending the account beyond the production boundary applied in the integrated framework of the SNA

Alternative treatments of own-account production of services

38.36 The scope of the thematic account may be expanded to include measures that extend the production boundary applied in the integrated framework of the SNA in ways that add context and help give a complete picture of the key activity. One such extension is to include the relevant goods and services produced and consumed

within the same establishment in expanded measures of the output and intermediate consumption of the key activity. This may include ancillary activities undertaken in the establishment where the output is used, which are not recorded in the integrated framework of the SNA (see paragraphs 6.41 to 6.47), Recording the production and intermediation consumption of an output by the same establishment, as well as the recording of production and intermediate consumption associated with ancillary activities, has no effect on value added but it brings visibility to previously invisible internal production. For example, in a transport account, the operating cost of trucks owned by enterprises in non-transportation industries might be used to measure in-house production of transport services.

38.37 A further step in extending the production boundary is to bring the relevant unpaid services produced by households for their own consumption into an expanded measure of the output of the key activity. Household final consumption expenditures will then include the imputed value of the services produced by households for their own consumption and exclude households' expenditures on items used in producing these services either as intermediate inputs or for fixed capital formation (e.g., motor fuel and motor vehicles bought by households in the case of an account on transport). The value added from the households' production of own-account services can also be decomposed. For example, in the case of a transport account these components will be: (i) net mixed income equal to the imputed value of households' time spent in producing transportation services for own consumption, (ii) the depreciation of the vehicles used in this activity, and (iii) the taxes on production associated with the vehicles (which are included in other current taxes paid by households in accounts based on the production boundary applied in the integrated framework of the SNA).

Bringing visibility to externalities

38.38 Externalities are impacts of the actions of a unit on the condition or circumstances of third parties that occur without those parties' consent. Although these impacts can be either positive or negative, externalities from production that significantly affect households' well-being or sustainability are usually negative. As discussed in section B4 of chapter 2 on National accounts and its contribution to measuring well-being and sustainability, the relationship between aspects of well-being affected by externalities and accounting-based data such as the integrated framework of the SNA or the SEEA is complex and involves issues of measurement boundaries, indirect effects of externalities that are captured in the integrated framework of national accounts, and valuation concepts. In the case of environmental externalities, chapter 12 (section 12.2.3) of the *SEEA Ecosystem Accounting* provides some examples of alternative presentations, including one in which the costs associated with the external effects are attributing to the causing unit. Such alternative presentations could bring visibility to selected externalities – in the integrated framework of national accounts, externalities are not attributed to "causing" units and their direct impacts on the affected units are not explicitly recorded.

4. A simplified illustration of extending the supply and use tables

38.39 Tables 38.1 to 38.3 present a simplified example of extending the supply and use tables to record own-account transport services of enterprises and households. The starting point for the example is the standard set of supply and use tables in table 38.1. The standard supply table shows that the economy produces apples valued at 35 at basic prices and imports apples valued at 20, and that trade margins and taxes on products raise the value at purchaser's prices of the total supply of apples to 75. The economy also produces motor fuel of 34 valued at purchaser's prices, motor vehicles of 40 valued at purchaser's prices, wholesale and retail trade margin services of 54, and transport services of 24. The use table shows that apple growers use motor fuel of 2 and transport services of 3, and that apples of 30 are used in the apple cider manufacturing industry. Another activity included in the manufacturing column refines imported crude petroleum of 18 into motor fuel, and a third manufacturing activity uses imported vehicles parts of 20 to produce motor vehicles. The manufacturing activities also use motor fuel of 5 and transport services of 6. The trade industry uses transport services of 15, and households use apples of 45, apple cider of 72, motor fuel of 12, and motor vehicles of 20 for final consumption. Motor vehicles of 20 are also used by domestic industries for gross fixed capital formation.

38.40 Table 38.2 extends the supply and use tables to include transport services produced and used internally by

establishments in the agriculture and manufacturing industries. Recording the output and intermediate consumption of internally produced transport services increases the economy's output and the total intermediate consumption of transport services by 6 but does not change any industry's value added.

38.41 Table 38.3 further extends the production boundary to include the transport services that households produce for their own use. The imputed value of the transport services produced by households for their own consumption is 30. However, the value added of the transport industry and overall final uses only increase by 18. A change in the classification household expenditure of 12 on motor fuel from final consumption to intermediate consumption of the expanded transport industry partially offsets the impact of the additional output and final consumption of transport services of 30. The composition of final expenditures also changes, with a reduction of 2 in final consumption caused in part by the reclassification of household expenditures on motor vehicles of 20 from final consumption to gross fixed capital formation. The extended use table also includes a decomposition of the value added of households' own-account transport activity. Taxes on the use of motor vehicles of 4 and depreciation of the motor vehicles of 8 leave only 6 for the net mixed income generated by the transport activity.

38.42 To simplify tables 38.1 to 38.3, motor vehicle maintenance and repair services are not included in these tables. However, in a more realistic example of bringing transport services produced by households for their own consumption inside the production boundary, there would also be a change in the treatment of household expenditures on motor vehicle maintenance and repair services from final consumption to intermediate consumption, in the same way as households' use of motor fuel shifts from final consumption to intermediate consumption in table 38.3. The intermediate consumption of maintenance and repair services would reduce the value added of households' own-account transport activity and the mixed income from this activity. The change in treatment of maintenance and repair services would also reduce final consumption expenditures.

5. Adding the analysis of income and finance

38.43 The standard sequence of economic accounts for institutional sectors begins with the production and generation of earned income accounts, then proceeds to present a series of accounts that analyse revenues and expenditures, changes in assets and liabilities, and stocks of assets and liabilities. If the main items in this series of economic accounts are feasible to calculate, they will provide important insights into the performance and financial condition of the key activity. Among these items are property income receipts and payments, the balance of earned incomes, current transfers, including taxes on income and wealth, saving, as well as analytical breakdowns of (the changes in) the stocks of assets and liabilities. However, the feasibility of compiling these items depends on how the key activity is organized.

38.44 Production and the related transactions covered by the supply and use tables are undertaken by establishments. In contrast, the accounts that analyse income flows and the changes in, and stocks of, assets and liabilities concern transactions that are undertaken by institutional units, which are enterprises in the case of a key activity. Enterprises can comprise multiple establishments, and data on enterprises often combine multiple establishments. If the establishments involved in the key activity belong to enterprises that do not have significant other establishments engaged in different activities, the transactions and balance sheets of those enterprises can be linked to the key activity and a complete sequence of economic accounts for the key activity can be compiled. However, if the enterprises involved in the key activity also have significant establishments engaged in other activities, the enterprises' transactions and balance sheets cannot be treated as coming just from the key activity. In this case, the income flows and (changes in) assets and liabilities of the key activity typically cannot be measured.

Table 38.1: The standard supply and use tables

Supply table

		Output by domestic industry					Imports	Trade and transport margins	Taxes less subsidies on products	Total supply
		Agriculture	Manufacturing	Trade	Transport	Total				
Supply by product	Apples	35				35	20	15	5	75
	Apple-cider		55			55		20	15	90
	Crude petroleum						18			18
	Motor Fuel		24			24		5	5	34
	Motor vehicle parts						16	4		20
	Motor vehicles		30			30		10		40
	Trade and transport			54	24	78		-54		24
	Total output/imports	35	109	54	24	222	54	0	25	301

Use table

		Intermediate consumption by domestic industry					Final expenditures			Total use
		Agriculture	Manufacturing	Trade	Transport	Total	Final consumption	Gross fixed capital formation	Exports	
Use by product	Apples		30			30	45			75
	Apple-cider					0	72		18	90
	Crude petroleum		18			18				18
	Motor Fuel	2	5	3	12	22	12			34
	Motor vehicle parts		20			20				20
	Motor vehicles					0	20	20		40
	Trade and transport	3	6	15		24				24
	Total intermediate consumption/final uses	5	79	18	12	114	149	20	18	301
Value added (gross)		30	30	36	12	108				
Output		35	109	54	24	222				

Table 38.2: Extending the supply and use tables to incorporate own-account transport services of enterprises

Supply table

		Output by domestic industry					Imports	Trade and transport margins	Taxes less subsidies on products	Total supply
		Agriculture	Manufacturing	Trade	Transport	Total				
Supply by product	Apples	35				35	20	15	5	75
	Apple-cider		55			55		20	15	90
	Crude petroleum						18			18
	Motor Fuel		24			24		5	5	34
	Motor vehicle parts						16	4		20
	Motor vehicles		30			30		10		40
	Trade and transport	0+2	0+4	54	24	78+6		-54		24+6
	Total output/imports	35+2	109+4	54	24	222+6	54	0	25	301+6

Use table

		Intermediate consumption by domestic industry					Final expenditures			Total use
		Agriculture	Manufacturing	Trade	Transport	Total	Final consumption	Gross fixed capital formation	Exports	
Use by product	Apples		30			30	45			75
	Apple-cider					0	72		18	90
	Crude petroleum		18			18				18
	Motor Fuel	2	5	3	12	22	12			34
	Motor vehicle parts		20			20				20
	Motor vehicles					0	20	20		40
	Trade and transport	3+2	6+4	15		24+6				24+6
	Total intermediate consumption/final uses	5+2	79+4	18	12	114+6	149	20	18	301+6
Value added (gross)		30	30	36	12	108				
Output		35+2	109+4	54	24	222+6				

Table 38.3: Extending the supply and use tables to account for unpaid transport services produced by households

Supply table

		Output by domestic industry					Imports	Trade and transport margins	Taxes less subsidies on products	Total supply
		Agriculture	Manufacturing	Trade	Transport	Total				
Supply by product	Apples	35				35	20	15	5	75
	Apple-cider		55			55		20	15	90
	Crude petroleum						18			18
	Motor Fuel		24			24		5	5	34
	Motor vehicle parts						16	4		20
	Motor vehicles		30			30		10		40
	Trade and transport	0+2	0+4	54	24+30	78+6+30		-54		24+6+30
	Total output/imports	35+2	109+4	54	24+30	222+6+30	54	0	25	301+6+30

Use table

		Intermediate consumption by domestic industry					Final expenditures			Total use
		Agriculture	Manufacturing	Trade	Transport	Total	Final consumption	Gross fixed capital formation	Exports	
Use by product	Apples		30			30	45			75
	Apple-cider					0	72		18	90
	Crude petroleum		18			18				18
	Motor Fuel	2	5	3	12+12	22+12	12-12			34
	Motor vehicle parts		20			20				20
	Motor vehicles					0	20-20	20+20		40
	Trade and transport	3+2	6+4	15		24+6	+30			24+6+30
	Total intermediate consumption/final uses	5+2	79+4	18	12+12	114+6+12	149-2	20+20	18	301+6+30
Value added (gross)		30	31	36	12+18	108+18				
Other taxes (less subsidies) on production					+4	+4				
Depreciation					+8	+8				
Mixed income (net)					+6	+6				
Output		35+2	110+4	54	24+30	222+6+30				

Chapter 39: Informal economy

This is a common chapter with chapter 18 of *BPM7*, and for the most part, the text is identical in both the *2025 SNA* and *BPM7*.

A. Introduction

39.1 The informal economy provides employment and income to many people who might otherwise be unemployed. Informal workers and enterprises tend to be vulnerable to negative economic shocks, which has consequences for inequality and poverty. Measuring the informal economy is important for designing, implementing, monitoring and analysing macroeconomic and social policies. The measurement framework for the informal economy aims to ensure consistent measures of informal production and informal labour inputs. Data compiled according to this framework are designed to inform policy decisions that may decrease the vulnerability of informal workers and enterprises, especially in developing economies.

39.2 The informal economy refers to the productive activities carried out by persons or economic units that are not covered by formal arrangements established by regulations and laws, such as registration, regulation, payment of taxes, and coverage of workers by social security and other labour laws and regulations. The informal economy includes all informal productive activities carried within the general production boundary. Compiling statistics on the informal economy makes it possible to assess how far the economic benefits of development reach to people who are not counted by the statistics that are based on official registration or compliance with tax laws. Despite the difficulty of doing so, attempts must be made to identify and measure the informal economy. Each country should aim to develop its system of statistics on the informal economy in order to provide an adequate information base for a wide range of descriptive and analytical purposes, including for (a) describing and enhancing understanding of the informal economy, and (b) supporting the development of policies addressing the informal economy, while taking account of specific national needs and circumstances.

39.3 The International Labour Organization (ILO) in its *21st ICLS Resolution Concerning Statistics on the Informal Economy* established the standards for statistics on the informal economy. Whilst there is commonality between the concepts and definitions in the ILO standards and those in the integrated framework of the SNA, the meaning of these concepts and definitions is sometimes different from those used in the integrated framework of the SNA. For example, the integrated framework of the SNA includes illegal or illicit activities in the production boundary, whereas the ILO standards exclude them from the informal economy. This chapter summarizes the ILO standards, giving emphasis to the concepts, definitions and classifications used in the ILO standards and explaining their relationship with the integrated framework of the SNA.

39.4 It is a common misconception that GDP is underestimated because it does not include the production of informal businesses and informal labour inputs. Conceptually the integrated framework of the SNA includes all productive activities irrespective of whether these activities are formal or informal. The compilation of exhaustive measures in the presence of informality is certainly challenging, but as discussed in paragraphs 7.47 to 7.56, compilers should always endeavour to make efforts to use data sources and estimation methods that cover non-observed activities. The framework for the informal economy described in this chapter does not focus on developing exhaustive measurements of production, but rather on providing a complete presentation of the informal economy.

39.5 The non-observed economy, including non-observed cross-border trade in goods and services, is conceptually distinct and different from the informal economy. The non-observed economy includes activities that, for various reasons, are not captured in regular statistical enquiries. It is a pragmatic term that is used in the context of achieving exhaustive statistics and includes misreporting by formal units such as large corporations. Efforts to cover the non-observed economy ensure that all productive activities are covered in statistical estimates even if not covered by statistical enquiries. Because informal activities tend to be difficult to measure and are sometimes omitted from statistical surveys or administrative data sources, there tend to be certain overlaps between the informal economy and the non-observed economy. Nevertheless, the concepts serve different purposes, and each includes elements that are not included in the other. The primary focus of this chapter is on the informal economy, but section F discusses the non-observed economy in its relation to the informal economy.

1. The policy interest in measuring informal activities

39.6 Interest in the informal economy continues to attract considerable attention. Informal productive activities are often associated with lower and uncertain income for workers since informal workers and enterprises are less protected against negative economic shocks. This may have broader consequences for inequality and poverty since informality is correlated with vulnerability through the denial of rights at work, the absence of sufficient opportunities for quality employment, and the lack of effective social protection. The quantification of the informal economy and data on its characteristics are needed to enhance the international comparability of statistics on the informal economy, the measurement of decent work and the (material) well-being of households and society in general, and in identifying the main drivers of informality. Analysing macroeconomic and social policies on the informal economy facilitates the transition from the informal economy to formal productive activities and to the achievement of gender equality, sustainable development and social justice.

39.7 It should be noted that the relevance of statistics on the informal economy in a given country will depend on the nature of its society, labour markets and regulations as well as user needs, and that their implementation will therefore, to a certain extent, be determined by national circumstances.

2. Structure of the chapter

39.8 Sections B and C present a summary of the framework of the *21st ICLS Resolution concerning statistics on the informal economy*. Section B looks at statistics on economic units and production in the informal economy, clarifies the use of existing terminology, and provides the definitions of the informal economy and the classifications used to identify and analyse informal productive activities. Section C focusses on informal work arrangements. Sections B and C also discuss the relationships between informal economy statistics and the integrated framework of the SNA. Informal aspects of two issues that are of special importance to the national accounts, i.e., digitalization and informal cross-border flows, are discussed in Section D. Section E summarizes the data sources and the presentation of indicators for the informal economy. The relationship between the non-observed economy and the informal sector is presented in section F. The interest in the informal economy has led to the production of several handbooks and studies of current practices. Reporting these in depth is beyond the scope of this chapter, but section G gives a brief description of the main available guidelines and indicates where they may be consulted.

B. Framework for the informal economy

39.9 The standards adopted by the *21st ICLS Resolution concerning statistics on the informal economy* are designed to guide countries in measuring informal productive activities of workers and economic units. The standards provide a conceptual framework for statistics on the informal economy, definitions of distinct subsets of economic units depending on their status of (in)formality and the intended destination of their production, a set of definitions of distinct subsets of informal work, a set of indicators to provide information on the characteristics, circumstances and needs of workers and economic units, and operational concepts, definitions and guidelines for the compilation of statistics on the informal economy. In designing the framework for statistics on the informal economy, care was taken to maintain coherence with other international statistical standards, particularly regarding the SNA. The next section explains the relationship between the terminology used in the *21st ICLS resolution* and the familiar terminology used in the integrated framework of the SNA.

1. Clarifying the use of familiar terminology

39.10 The statistics on the informal economy compiled according to the 21st ICLS standards are aligned with the SNA, while using different terminologies from the integrated framework of the SNA for some concepts and classifications to allow the statistics to highlight certain features of informality. The different uses of terms are presented below.

Productive activities of economic units

39.11 In both the ICLS standards and the integrated framework of the SNA, the concept of productive activities of (economic) units includes processes or activities that are carried out under the control and responsibility of an economic unit, using inputs of labour, capital, goods and services to produce outputs of goods or services. Similarly, for the concept of "economic unit" the definition used in the statistics on the informal economy is aligned with that used in the integrated framework of the SNA, albeit that in the latter reference is typically made to "institutional unit" or "establishment" (see chapter 5 on Institutional units and sectors, economic territory and residence and chapter 6 on Enterprises, establishments and industries).

Productive activities of persons

39.12 The concept of productive activities of persons in the statistics on the informal economy includes work and labour activities within the production boundary applied in the integrated framework of the SNA as well as activities outside this production boundary although inside the general production boundary.

Sector

39.13 The term "sector" used in the *21st ICLS Resolution concerning statistics on the informal economy* does not have the same basis as the typical use of the word "sector" throughout the integrated framework of the SNA. In the integrated framework of the SNA, sectors are made up of complete institutional units; in the context of the informal economy only the productive activities are considered and other activities of the unit such as consumption and accumulation are excluded. In addition, the criteria used to identify the sectors in the statistics on the informal economy are based on the intended destination of the production and the formal status of the unit. Thus, for example, households having no productive activity are simply not considered in the steps to identify those unincorporated enterprises operated by households that are to be included in the informal economy.

Enterprise

39.14 In the integrated framework of the SNA, a corporation represents a single enterprise (or institutional unit), but each enterprise may consist of a number of establishments. A key difference between an enterprise and an establishment is that a full set of accounts must exist, or could be constructed, for an enterprise, but for an establishment a much more restricted set of data is available, typically only information relating to production, number of employees and the capital formation associated with the activity.

39.15 Within a household many different types of production activities may take place. A complete set of accounts does not exist for individual activities that are not activities of quasi-corporations, nor for the total of all household activities. The usage of "unincorporated enterprise" in the integrated framework of the SNA is taken to mean the totality of all unincorporated activity undertaken by a household even though in a supply and use table, for example, this may be partitioned by types of activity and be grouped with establishments of corporations undertaking the same activity.

39.16 The use of the term "unincorporated enterprise" in the *21st ICLS Resolution concerning statistics on the informal economy* does not correspond to the sum of unincorporated activity of a household but to each activity separately. In SNA terms, the unincorporated enterprise is broken down into a number of unincorporated establishments, some of which may be included in the informal economy and some excluded, even for the same household. For example, if one member of a household operates an unincorporated repair business and another member of the same household operates an unincorporated childcare business, they would be treated as separate unincorporated establishments in the informal economy statistics. Furthermore, the informal economy statistics identify individual members of a household as owning and operating each establishment/enterprise and capable of employing workers. In the integrated framework of the SNA, it is the household collectively that is responsible for all activity and for employing workers.

Sub-sectoring production

39.17 The integrated framework of the SNA subdivides production into market production, production for own final use and non-market production. Non-market production is not at issue here since it is never undertaken by households. However, to meet the *21st ICLS Resolution* it is necessary to subdivide production by households into production that is mainly for sale or barter and production that is mainly for own final use. In the case of unincorporated enterprises where the production is mainly sold or bartered (intended for the market), all of the production of the unit is included in production by the informal sector, while where the production is mainly for own final use, it is allocated to the household own-use production and community sector.

Formal sector, informal sector and household own-use production and community sector

39.18 The integrated framework of the SNA does not use the expression "formal sector", but it is not difficult to conceive of all units in the corporations sectors, general government and NPISHs as being part of a formal sector as far as production is concerned. Quasi-corporations are included because they are included in the corporations sectors. However, this is not the same as saying that any unit that is not informal is formal, since households with unincorporated enterprises not included in the informal sector are divided between those that are treated as formal and the rest that are included in the household own-use production and community sector.

39.19 The meaning of household units according to the *21st ICLS Resolution* is thus quite different from that of the integrated framework of the SNA since the latter includes as households all the units included under the *21st ICLS Resolution* as informal and mainly producing for the market, plus households mainly producing for own final use, plus those units with unincorporated enterprises treated as formal, plus households as consumers plus institutional households.

2. Informal productive activities

39.20 *Informal productive activities* are defined as all productive activities carried out by persons or economic units that are – in law or in practice – not covered by formal arrangements as established by regulations and laws, such as:

a. regulations that stipulate the rights and responsibilities and obligations of the economic units and the workers;

b. commercial laws that regulate the productive activities carried out by economic units and their engagement in commercial contracts, including to safeguard their intellectual and physical property;

c. procedures to report economic activities such as fiscal obligations in order, for example, to pay taxes or to cover employees by social security;

d. labour laws and regulations such as those relating to freedom of association, rights to collective bargaining, paid annual leave, paid sick leave, the minimum wage, hours of work, social security coverage and social dialogue; and

e. procedures that regulate access to the institutional infrastructure such as markets, governmental support mechanisms and financial institutions including banks.

39.21 Coverage by formal arrangements in law and in practice does not merely imply having legal coverage by the formal arrangements but means that the arrangements should be effectively accessed in practice by the worker and the economic unit by fulfilling procedures that entail duties and obligations for all parties involved.

39.22 Informal productive activities can be viewed as an underlying concept that contributes to recognizing two highly linked but also slightly different perspectives of informality, i.e., the perspective of workers and the perspective of economic units. This concept forms the conceptual foundation from which the different statistical components are derived and points toward which statistical components should be statistically quantified and described.

39.23 Informal productive activities of persons include informal tasks and duties carried out by persons in informal

employment; in formal employment, carrying out partly informal activities tasks and duties; or in unpaid trainee work, volunteer work, own-use production work and other work activities (see section C of this chapter). Informal productive activities of economic units include informal production carried out by economic units in the informal sector or by households producing for own final use, including direct volunteer work, and production by non-formal non-profit organizations. Informal productive activities may be undertaken in most kinds of economic activity, including the agriculture, forestry and fishing industry, and include household own-use production work within the general production boundary. Housing services of owner occupiers are by convention excluded from the informal economy because no informal labour inputs are used for this production activity.

3. The informal economy

39.24 ***The informal economy comprises all informal productive activities of persons or economic units, whether or not they are carried out for pay or profit. The scope of informal productive activities includes activities within the general production boundary; this includes informal household own-use production of goods and services, informal sector production, and the labour inputs that are used to undertake these types of production, as well as informal labour inputs in the formal sector.*** The concept of the informal economy enables the comprehensive measurement of the informal productive activities carried out by economic units and of informal productive activities by workers in relation to employment and undertaken through forms of work other than employment.

39.25 For statistical purposes, the concept of the *informal market economy* is defined as all production for pay or profit in the informal sector and all productive activities of workers in employment that are – in law or in practice – not covered by formal arrangements.

39.26 Illegal and illicit activities where the production of goods and services are forbidden by law are excluded from the informal economy. However, the production of goods and services, that are usually legal, but become illegal when carried out by unauthorized producers, should be included in the informal economy.

39.27 The exclusion of illegal and illicit activities where the goods and services are forbidden by law relates only to the scope of what is measured in the informal economy. In the integrated framework of the SNA, illegal productive activities that fit the characteristics of transactions are treated the same way as legal actions and are therefore included within the production boundary applied in the integrated framework; see paragraphs 7.51 to 7.55. For example, if the sale of narcotics is forbidden by law, those activities should be excluded from the informal economy statistics, although they are included in the integrated framework of the SNA. Similarly, imports and exports of illegal goods and services are included in the external accounts but should be excluded from statistics on informal trade. Transactions in stolen goods are also included in the integrated framework of the SNA but excluded from statistics on the informal economy and from informal trade. However, some activities that are usually legal may be carried out illegally because they are conducted by an unregistered producer (for example, the sale of transport services by an unregistered producer). These activities that are usually legal but may be carried out illegally are not to be regarded as illegal activities according to the *21st ICLS Resolution* and are included in the informal economy statistics as well as the integrated framework of the SNA.

4. Formal sector, informal sector and household own-use production and community sector

39.28 The criteria used to identify the sectors in the statistics on the informal economy are based on the intended destination of the production and the status of (in)formality of the economic unit. The intended destination reflects whether, or not, the production is mainly intended for the market with the purpose of generating a profit and income. The criterion of production that is "mainly intended for the market" is similar to the definition of market producers as "establishments, all or most of whose output is market output"; see paragraph 7.145. The formal status of the economic unit reflects whether the unit is formally recognized by government authorities as a distinct producer and is thus covered by formal arrangements.

39.29 The framework for informal economy statistics assigns all economic units to one of three sectors: the formal

sector, the informal sector or the household own-use production and community sector, depending on the intended destination of the production and the status of (in)formality of the economic unit.

39.30 The *formal sector* comprises economic units that are formally recognized as distinct producers of goods and services for the consumption of others and whose production is mainly intended for the market with the purpose of generating an income or profit or for a non-profit purpose (i.e., non-profit institutions), or non-market production for use by other economic units, including the society as a whole. With respect to the (institutional) sectors distinguished in the integrated framework of the SNA, financial and non-financial corporations and general government are always formally recognized and therefore are part of the formal sector. In addition, formally recognized NPISHs are part of the formal sector. Households are assigned to the formal sector if they undertake production through a household unincorporated market enterprise that is registered in a government established system of registration or employs one or more persons to work as an employee with a formal job. Household unincorporated market enterprises that behave in much the same way as legally constituted corporations and keep a complete set of accounts, e.g., for tax purposes, are treated as quasi-corporations and included in either the financial or non-financial corporations sectors in the integrated framework of the SNA and as part of the formal sector in the ILO statistics.

39.31 The *informal sector* comprises economic units whose production is mainly intended for the market with the purpose of generating income and profit but that are not formally recognized as producers of goods and services distinct from the own-use production of the owner-operators' household. These (economic) units are all classified in the integrated framework of the SNA as part of the households' sector and may include informal partnerships. These economic units undertake production mainly intended for the market through a household unincorporated market enterprise that does not keep a set of accounts for tax purposes, is not registered in a governmentally established system of registration and does not employ one or more persons to work as an employee with a formal job.

39.32 The *household own-use production and community sector* comprises either households whose production (excluding owner-occupied housing services) is mainly for the household's own final use or for the use of other households, without the purpose of generating income and profit for the producing household or households; or non-formal non-profit organizations serving households (i.e., informal and temporary NPISHs). These units are characterized by not being formally recognized as distinct producers of goods or services and undertaking production that is mainly intended for the own final use of households or for the use of other households without the purpose of generating an income or profit. The production boundary for the household own-use production and community sector extends the production boundary applied in the integrated framework of the SNA in that the sector includes (and the integrated framework of the SNA does not include) most services produced for own use by households; see paragraphs 7.28 to 7.34.

39.33 Table 39.1 illustrates the classification of economic units in the formal sector, the informal sector and the household own-use production and community sector, adding detail on the different forms of informal paid and unpaid work that may be used as input to their formal or informal production.

Table 39.1: Informal productive activities in the informal economy

Sector		Formal sector	Informal sector*	Household own-use production and community sector	
Informal productive activities		Production in the formal sector is never informal All informal labour inputs of workers engaged by: formal household unincorporated market enterprises, formal NPISHs, corporations, and general government	All production by informal household unincorporated market enterprises All labour inputs used to undertake this production	Production by household engaging informal employees All labour inputs used to undertake this production	Informal household own-use production including non-formal non-profit organizations and direct volunteers All labour inputs used to undertake this production
Type of informal labour inputs	For pay or profit	Informal employment*	Informal employment*	Informal employment*	
		Partly informal labour inputs of persons in formal employment*		Partly informal labour inputs of persons in formal employment*	
	Not for pay or profit	Informal unpaid trainee work	Informal unpaid trainee work		Informal volunteer work
		Informal volunteer work	Informal volunteer work		Own-use production work
Relation to SNA production boundary:		Goods and Services			Goods / Services
		Production boundary applied in the integrated framework of the SNA**			
		General production boundary			

* Components of the informal market economy

** The production boundary applied in the integrated framework of the SNA also includes illegal activities that are out of scope in the informal economy framework.

39.34 The *21st ICLS Resolution concerning statistics on the informal economy* includes a set of operational definitions used to clearly identify the economic units belonging to each of the three sectors. Figure 39.1 illustrates how the framework identifies informal productive activities of economic units. The links between the three sectors (i.e., the formal sector, the informal sector, and the household own-use production and community sector) and the institutional sectors distinguished in the integrated framework of the SNA are shown in table 39.2.

Figure 39.1: Decision tree to identify informal productive activities of economic units

Note: The measure of production used in this decision tree is based on the general production boundary.

Table 39.2: The formal sector, the informal sector and the household own use production and community sector, and its relation to the institutional sectors distinguished in the integrated framework of the SNA

	Institutional sectors distinguished in the integrated framework of the SNA									
	a) Non-financial corporations and **b) Financial corporations**		**c) General government**	**d) NPISHs**	**e) Households**					
Type of institutional unit	Corporations	Quasi-corporations	Government units	NPISH	Households (excluding institutional HHs and HHs as consumers)					
					Unincorporated household market enterprises					
Main type of production	Market production	Market production	Non-market production	Non-market production	Market production	Market production	Own-use production			
							Owner-occupied housing services	Production by households for own use with employees	Production by households for own use without employees. Including non-formal non-profit organizations and direct volunteers.	
Operational definition as part of identifying the formal status	Incorporated enterprise	Have a complete set of accounts; registered for tax or similar purposes	Always formally recognized	Registered	Registered or engages formal employees	Not registered and does not engage formal employees	Never informal	Production is informal if employees are informal employees	Direct volunteers and non-formal non-profit organizations are always informal; other HH production for own use without employees is informal unless production is registered.	
Within the production boundary applied in the integrated framework of the SNA				**Yes**					Goods **Yes**	Services **No**
Sector of the economy	**Formal**					**Informal Sector**	**Household own-use production and community sector**			
Productive activities are part of informal economy	**Only informal labour inputs**					**Yes, both production and labour inputs**	**No**	**Yes, both production and labour inputs if employees are informal**	**Yes, both production and labour inputs unless production is registered**	

C. Informal work

39.35 This section defines and classifies informal work in the *21st ICLS Resolution concerning statistics on the informal economy*, points to the alignment of these concepts with international standards such as the *International Classification of Status in Employment (ICSE-18)*, presents the informal productive activities of persons in relation to the sectors in the *21st ICLS Resolution*, and defines and presents informal and formal employment in relation to those same sectors.

39.36 The *21st ICLS Resolution* related to measuring informal productive activities of persons provides a set of definitions for distinct subsets of informal work. In the informal economy, the concept of "productive activities of persons" is aligned with the definition of "work" in the international ICLS standards of work, employment, and labour underutilization. It includes activities within the production boundary applied in the integrated framework of the SNA as well as activities outside the production boundary of the integrated framework but inside the general production boundary. Work can be subdivided into five distinct forms:

a. own-use production work;

b. employment work;

c. unpaid trainee work;

d. volunteer work;

e. other work activities.

39.37 Informal work consists of productive activities performed by persons, as defined by the latest ICLS standards on work and employment, that are – in law or in practice – not covered by formal arrangements such as regulations and provisions that promote or facilitate the work and protect and regulate the actions and functions of the worker. It comprises:

a. productive activities carried out by persons in employment that are, in law or in practice, not covered by formal arrangements such as regulations and laws that stipulate the rights and responsibilities, obligations and protection of the economic units and the workers; and

b. productive activities carried out in relation to:

   i. own-use production work;

   ii. volunteer work;

   iii. unpaid trainee work; and

   iv. other work activities.

39.38 Persons carrying out informal productive activities in the informal economy may carry out this work for economic units categorized in the formal sector, informal sector or household own-use production and community sector (see table 39.3).

Table 39.3: Informal productive activities by persons in the informal economy

Persons	Informal work			
Main intention of the productive activities	For pay or profit		Not mainly intended to generate pay or profit	
	Informal productive activities in relation to employment		Informal productive activities in relation to forms of work other than employment	
Informal productive activities by persons	Formal employment with partly informal activities *	Informal employment *	Informal unpaid trainee work Informal organization-based volunteer work Informal other work activities	Informal own-use production work Direct volunteer work
Sector of the economic unit for which the work is provided	Formal sector	Formal sector	Formal sector	
		Informal sector *	Informal sector *	
	Household own-use production and community sector	Household own-use production and community sector	Household own-use production and community sector	Household own-use production and community sector

* Components of the informal market economy.

1. Informal and formal employment

39.39 Statistics on informal employment aim at:

a. establishing whether the productive activities defined as employment are, in law and in practice, covered by formal arrangements and the formal status of the economic unit for which this work is carried out; and

b. describing the structure and extent of informal employment, identifying groups of persons in employment most represented and at risk of informality, and providing information on exposure to economic and personal risks, decent work deficits and working conditions.

39.40 *Informal employment* is defined as any activity of persons to produce goods or provide services for pay or profit that is – in law or in practice – not covered by formal arrangements such as commercial laws, procedures to report economic activities, income taxation, labour legislation and social security laws and regulations providing protection against economic and personal risks associated with carrying out the activities. Informal employment comprises activities carried out in relation to informal jobs held by:

a. independent workers who operate and own or co-own an informal household unincorporated market enterprise;

b. dependent contractors who do not have a formal status in relation to the legal administrative framework or whose activities are not effectively covered by formal arrangements;

c. employees, if their employment relationship is not, in practice, formally recognized by the employer in relation to the legal administrative framework of the country or not associated with effective access to formal arrangements; and

d. contributing family workers whose work relationships are not formally recognized in relation to the legal administrative framework of the country or not associated with effective access to formal arrangements.

39.41 All tasks and duties carried out in relation to an informal job are considered to be informal productive activities. Informal productive activities performed by persons may also be carried out in relation to formal jobs if a subset of the tasks and duties carried out are not effectively covered by formal arrangements.

39.42 Persons may have one or several formal or informal jobs, or both, during a given reference period. Dependent workers have an informal or formal job for each economic unit on which the worker is dependent. Independent

workers have an informal or formal job for each informal or formal economic unit they operate and own or co-own. (Independent and dependent workers are discussed in paragraph 16.41.) Employed persons with an informal main job comprise all employed persons with an informal main job where the main job is the job with the longest hours usually worked as defined in the latest international statistical standards on working time. In the absence of information regarding hours usually worked, other information such as income from each job could be used to identify the main job. Employed persons with an informal secondary job comprise all employed persons with an informal second job or additional jobs.

39.43 The *International Classification of Status in Employment (ICSE-18)* classifies jobs held by persons according to type of authority. There are two broad categories: independent workers and dependent workers, where the former includes owner-operators of corporations and independent workers in household unincorporated market enterprises, and the latter includes dependent contractors, employees and contributing family workers.

a. Independent workers own the economic unit for which they work and control its activities.

b. Dependent workers are workers who do not have complete authority or control over the economic unit for which they work.

39.44 Persons holding informal jobs may be categorized in the informal sector, formal sector or household own-use production and community sector, depending on the sector of the economic unit for which the work is carried out or, in the case of dependent contractors, on their formal status in relation to the legal administrative framework of the country.

39.45 *Formal employment* is defined as any activity of persons to produce goods or provide services for pay or profit in relation to a formal job, where the activities are effectively covered by formal arrangements. Formal employment comprises productive activities carried out in relation to formal jobs held by:

a. independent workers in employment who operate and own or co-own a formal economic unit;

b. dependent contractors who have a formal status in relation to the legal administrative framework of the economy and whose activities are associated with effective access to formal arrangements;

c. employees, if their employment relationship is, in practice, formally recognized by the employer in relation to the legal administrative framework of the economy and associated with effective access to formal arrangements; and

d. contributing family workers carrying out work for a formal economic unit and whose work relationships are formally recognized in relation to the legal administrative framework of the economy and associated with effective access to formal arrangements. Registration of the job held by the contributing family worker and contribution to a job-related statutory social insurance scheme implies that the worker is employed formally in that job.

39.46 Persons holding formal jobs may be categorized in the formal sector or household own-use production and community sector depending on the sector of the economic unit for which the work is carried out or, in the case of dependent contractors, on their formal status in relation to the legal administrative framework of the economy.

39.47 Table 39.4 shows informal and formal jobs for five types of status in employment – owner-operators of corporations, independent workers in household unincorporated market enterprises, dependent contractors, employees, and contributing family workers. The cells numbered 1 through 8 represent various types of informal jobs. The cells shaded in light blue refer to formal jobs, and cells shaded dark blue are jobs which, by definition, do not exist in the economic units in that sector. The *21st ICLS Resolution Concerning Statistics on the Informal Economy* elaborates the definitions used to clearly identify the five types of status in employment.

Table 39.4: Informal and formal jobs by status in employment and sector

Sector of the economic unit for which the work is carried out	Independent workers[1]			Dependent workers					
	Owner-operators of corporations[2]	Independent workers in household (unincorporated) market enterprises[3]		Dependent contractors[4]		Employees		Contributing family workers	
	Formal	Informal	Formal	Informal	Formal	Informal	Formal	Informal	Formal[5]
Formal sector				1		2		3	
Informal sector		4		5		6		7	
Household own-use production and community sector						8			

Note: Cells shaded in dark blue refer to jobs, which, by definition, do not exist in economic units located in the specific sector. Cells shaded in light blue refer to formal jobs. Informal employment consists of the informal jobs in cells 1–8.

[1] Including employers and independent workers without employees (before ICSE-18 labelled "own-account workers").

[2] Including the ICSE-18-A categories 11 and 21.

[3] Including the ICSE-18-A categories 12 and 22.

[4] The sector of dependent contractors does not reflect the sector of the economic unit on which they depend but their formal status in relation to the legal administrative framework of the country.

[5] The existence of formal jobs among contributing family workers carrying out work for an economic unit in the formal sector depends on the national context (see paragraph 39.45d).

39.48 Depending on the national context and need, countries may identify persons with formal jobs carrying out partly informal productive activities and report the number of such persons, the hours spent on informal activities, or the earnings received from paid informal activities in relation to formal jobs.

2. Informal work other than employment

39.49 Informal work other than employment comprises informal productive activities in relation to own-use production work, volunteer work, unpaid trainee work and other work activities where the unpaid work is not covered by formal arrangements such as regulations and provisions that promote or facilitate the work and protect and regulate the actions and functions of the worker. Measuring the informal or formal nature of work other than employment supports the recognition and valuation of all forms of work, essential for achieving development goals such as attaining gender equality, social inclusion and social protection and reducing poverty. Informal work other than employment is not included in table 39.4. Detailed definitions of informal work other than employment are provided in the *21st ICLS Resolution concerning statistics on the informal economy*.

D. Digitalization and informal cross-border flows

39.50 The conceptual framework, definitions and classifications that underlie the statistics on the informal economy and their relation to the integrated framework of the SNA were presented in sections B and C. In practice, compilers will be confronted with many practical issues in collecting data and deriving estimates for informal activities. This section focuses on two issues that are of particular interest to national accounts and balance of payments statistics: digitalization and informal cross-border flows.

1. Digitalization

39.51 Digitalization penetrates many aspects of economic activity which leads to concerns about the possible mismeasurement of economic activity. New types of economic activities often make use of digital technologies and create new types of jobs, including jobs that are considered informal. Many of these jobs facilitated by digitalization are in the role of dependent contractors as described in section C of this chapter.

39.52 Most of the new forms of dependent contractors facilitated by digitalization are dependent on large formal enterprises that provide a digital intermediation service. Examples include households that provide transport or accommodation services. The formal or informal status of dependent contractors would vary based on the legal administrative framework of an economy, which regulates the ties between dependent contractors and formal economic units. For example, if dependent contractors are registered, participate in social insurance schemes or are regulated by the government in ways that facilitate their work or protect them as workers, they are classified as formal workers. If the government does not require the formal economic units to register or provide formal regulations or protections to the dependent contractors with whom they work, then the dependent contractors will be informal workers.

39.53 Digitalization facilitates household participation in production activities that can be informal, such as through digital marketplaces. Digitalization also provides opportunities for households to deliver interactive services such as online learning and entertainment channels where income is earned by the household through advertising or from viewer subscriptions. Households that receive monetary remuneration for uploaded content can be considered unincorporated household enterprises. If the household is not recognized by government authorities as a distinct market producer and thus is not covered by formal arrangements, then it is regarded as an informal enterprise. For multinational enterprise groups that operate digital platforms in a number of countries, the formal/informal status of the dependent contractors may vary from country to country depending on the legal arrangements in each country.

39.54 Additional general information on the role of digitalization and how it should be accounted for is provided in chapter 22 on Digitalisation.

2. Informal cross-border flows

39.55 Informal cross-border flows pose challenges to data collection and estimation because they represent transactions undertaken by small units and households that may not be covered by the regular data collection programmes used for the compilation of national accounts and external accounts.

39.56 The framework for the informal economy presented in this chapter relates to the production of goods and services in the domestic economy. It is possible to extend the framework to account for external transactions related to activities of informal workers and informal economic units. These transactions would be recorded primarily in the current account and include the following:

a. Trade in goods conducted by informal workers and informal economic units (exports and imports);

b. Trade in services by informal economic units (exports and imports);

c. Informal employment of non-resident workers;

d. Remittances related to the informal economy.

39.57 Trade in goods conducted informally includes small scale but frequent movement of goods between neighbouring countries by informal units or workers, shuttle trade (see paragraph 10.14 of *BPM7*), fish catch traded between vessels at sea where the vessel of the compiling economy is operated by informal units, and smuggling of otherwise legal goods by informal units or workers.

39.58 If an informal worker carries goods over the border for a formal enterprise, then the change of ownership is between a formal unit and a non-resident (formal) unit. In this case, only the work done by the carrier of the goods would be part of the informal economy (either a service by an unincorporated market enterprise or work by an informal employee). The payment from the formal unit to the carrier of the goods could be either an international or a domestic transaction depending on the residency of the parties.

39.59 The carriage of goods by informal workers and informal economic units across country frontiers is an

important component of the informal economy, particularly in developing countries. Compilers of trade in goods are encouraged to collect data on the value of goods traded by informal units and workers and to gather information on the persons conducting informal trade when these activities are significant. One approach that has been used is to conduct routine surveys at border stations where imports and exports of goods that are carried over the border by informal units or informal workers can be recorded or observed.

39.60 Trade in services by informal units includes services such as:

a. Room rental, ride services or informal restaurant and bar services that are provided by informal units to travellers who are temporarily present in the reporting economy;

b. Exports and imports of services such as hairdressing, housekeeping and caring for persons, or construction provided by self-employed persons that move across borders but are not registered in a governmentally established system of registration in either their economy of residence or the economy of activity; and

c. Cross-border services that are delivered online, such as tutoring, and other income generating online services where the service provider is working informally and has not registered in a governmentally established system of registration.

39.61 Undeclared and underdeclared trade in goods or services by formal units is not part of the informal economy but may be accounted for as non-observed international trade – see section F of this chapter.

39.62 Some trade that is part of the informal economy in one economy may not be considered informal in the counterpart economy. This would occur, for instance, if a fishing vessel operated by an informal unit traded with a fishing vessel operated by a formal unit from another economy. Another example would be for accommodation services provided by informal units to non-residents; this would be considered part of the informal economy in the economy of the service provider, but for the economy of the traveller this would not generally be recorded in the statistics on the informal economy.

39.63 Some non-residents such as seasonal workers and non-resident students may engage in informal employment because they do not have the appropriate employment permits to engage in formal employment. Volunteer work by non-residents may also be considered informal depending on whether the work satisfies the criteria discussed in paragraph 39.49 and the *21st ICLS Resolution concerning statistics on the informal economy*.

39.64 The *21st ICLS Resolution* does not discuss remittances. However, as migrant workers and non-national residents are often at risk of informality, it may be informative to provide information on remuneration of employees and personal transfers that relate to informal workers and informal economic units.

39.65 Remittance outflows related to the informal economy include personal transfers of income earned from informal employment by residents and personal transfers from income earned by resident persons belonging to an informal economic unit, as well as remuneration of employees less transport and travel of border, seasonal and other short-term non-resident workers such as unregistered non-resident domestic workers employed by households. The counterpart country would record these data as remittance inflows, but the information may not inform the same policy needs as other data on the informal economy.

39.66 As explained in paragraphs 39.26 and 39.27, trade in goods and services that are forbidden by law are excluded from the statistics on the informal economy. However, the balance of payments statistics include all trade in illegal goods and services, so care should be taken in reconciling the balance of payment statistics with external transactions from statistics on the informal economy to account for the difference in treatment.

E. Data sources and presentation of indicators

39.67 The standards for statistics on the informal economy described in sections B and C provide the conceptual basis for statistics to be compiled in a harmonized and comparable manner from different data sources. The sources and data collection methods will depend on statistical capacity, national priorities, measurement objectives and the relevant reference unit.

1. Criteria for selecting data sources

39.68 Complete coverage of the desired elements for measuring informality might require the use of multiple sources. A close collaboration between different national institutions, including the main users of the data, national statistical offices and other national data producers, is important to ensure harmonization across sources and institutions.

39.69 Different data sources each have their own strengths and limitations and can be viewed as complementary to provide data on different aspects of the informal economy. The ILO provides methodological guidance that can facilitate international comparability for data on the informal economy.

39.70 For any data source the quality of the data generated will be determined by the combination of methodologies used and concepts applied. Differences in survey sample sizes, population coverage, unit of observation, ability to apply definitions comprehensively and range of data generated, among others, will have implications in respect of precision, bias and comparability across sources. When planning the system of statistics on informality, close attention should be paid to the methodologies used to ensure that estimates generated are as representative as possible of the target population, that the coverage of indicators produced is in line with objectives, and that samples are adequate to achieve desired levels of precision.

39.71 To enable clear and appropriate interpretation of the statistics it is crucial that data quality is assessed and reported on transparently. Metadata describing the sources, the concepts, the methodologies, and the results generated should be published alongside any published data.

2. Data collection

39.72 In general, household-based surveys, particularly labour force surveys, are important data sources for producing statistics with persons and jobs as reference units. Labour force surveys, generally characterized by detailed sequences of questions on the characteristics of jobs, are typically the recommended source of statistics for monitoring the extent of informal and formal jobs, assessing levels of informality and formality and levels of protection and vulnerability, identifying persons most exposed to and most represented among informal jobs, and assessing the working conditions of persons in formal and informal jobs. They are also a useful source to identify drivers of informality associated with the structure of the labour market. A combined household-establishment survey may be able to meet the same objectives.

39.73 Other household surveys, such as surveys on poverty and living standards, or household income and expenditure surveys, generally include less detailed sequences of questions on labour and may be designed with smaller sample sizes than a typical labour force survey. When such surveys include questions to identify persons having informal and formal jobs, they can be particularly suited to the production of data to analyse the relationship between informality and the main topics covered by the survey such as poverty, the level and composition of income and expenditure, and access to social protection beyond job-related contributory social security.

39.74 Other specialized household surveys, such as time use surveys and household-based surveys on agriculture, education and training, or specialized surveys on digital platform employment and labour migration, may be better suited for the measurement of specific working activities, or for focusing on specific subgroups of the population. Time use surveys can be an important source for the production of statistics on participation and time spent in informal unpaid work such as the own-use provision of services (in particular informal unpaid domestic work and care work). Surveys targeting specific subgroups of the population might be more appropriate for groups whose total number might be small in labour force survey samples, limiting the possibility to produce reliable statistics. It should be taken into account that the constraints of sample surveys often mean that certain groups at greater risk of informality, such as persons with a disability, migrant workers or digital platform workers, are also those likely to be under-represented in the sample.

39.75 National population censuses are an important source of statistics on employment and often provide the basis for designing survey samples, integrating national data sources, and producing small area estimates. Including questions to classify those employed according to the formal or informal nature of their job can allow the generation of estimates of informality for small geographical areas as well as for small population groups.

39.76 Economic censuses, enterprise-based surveys and mixed surveys are the main data sources for the analysis of

informal sector and formal sector economic units, their production and contribution to GDP, and their characteristics. In general, due attention should be paid to ensuring that the scope of activities and type of economic units covered (in terms of size, place of work, economic activity and institutional sector) do not imply an exclusion of economic units likely to be informal (for example, independent workers without employees, units under a certain size threshold, units carrying out agricultural activities, units with non-fixed premises or home-based activities). To achieve comprehensive coverage of informal sector units, special attention should be paid to the sampling methods and frame used. The use of area-based sampling frames can be a useful method to establish an exhaustive list of units covering household-based activities and activities taking place in non-fixed locations.

39.77 Mixed surveys, that is, combined multi-stage household and establishment surveys, are specifically designed to identify and target economic units in the informal sector. Deriving their sample from a representative household survey, such as the labour force survey, ensures the inclusion of all types of activities within the informal sector, home-based activities, activities carried out from fixed locations as well as non-fixed locations. This requires an identification of economic units in the informal sector, through their owner(s), in the first phase. Care should be taken to ensure a sufficient sized representative sample of economic units in the informal sector.

39.78 Administrative records can be used as part of an indirect estimation of informal employment and of the informal sector because they provide information on formal employment and the formal sector. The number of persons covered by formal arrangements can, for example, be estimated in taxation systems, employment services and social security schemes. The size of the formal sector could be estimated by the use of business registers, tax registers and the like. The possibilities to do so depend on the structure and content of the country-specific administrative sources. Priority should, however, in general be given to direct methods based on household surveys and enterprise-based surveys or mixed surveys for more accurate estimations of the total informal employment and the informal sector. Administrative information such as legal identity of the economic unit, taxation, declared earnings or income and contributions to social insurance in relation to a specific job can also be used as relevant auxiliary information in surveys to further support the identification of formal jobs and formal economic units. This requires that a direct linkage at the level of persons and jobs or economic units is feasible in the country.

3. Presenting indicators on the informal economy

39.79 To support the development of national policies and interventions for addressing the consequences of informality and facilitating transitions to formality based on evidence, a set of indicators should be selected reflecting the national context, priorities and objectives. The indicators to be produced will depend on the specific component of the informal economy under scrutiny, data sources and national policy goals. The information relating to activities undertaken informally extends, in terms of the integrated framework of the SNA, only as far as the production account and the generation of earned income account.

39.80 The indicators linked to the different components of the informal economy could be structured to provide information on six dimensions of informality:

a. the extent of informality – the prevalence of informality across jobs, economic units and activities;

b. the composition of informality – the distribution of informal and formal jobs and economic units by socio-demographic, employment-related characteristics and characteristics of the economic units and socio-demographic characteristics of the owner(s);

c. the exposure to informality – the percentage of persons with informal main jobs and of economic units in the informal sector by socio-demographic, employment-related characteristics and characteristics of the economic units and socio-demographic characteristics of the owner(s);

d. working conditions and levels of protection for those in informal and formal employment, productivity and factors constraining or enhancing the development and sustainability of informal economic units and formal ones;

e. contextual vulnerabilities – including poverty, inequalities, discrimination and other conditions such as limited or no access to land and natural resources; and with regard to all income sources and social

protection from all household members, as well as the composition of households; and

f. other structural factors.

The *21st ICLS Resolution concerning statistics on the informal economy* elaborates on the various possible indicators covering these six elements. A wider set of indicators to further support the national production of informality statistics can also be found in the *ILO Informal Economy Indicator Framework*.

F. The non-observed economy

39.81 The part of the economic activity difficult to measure has become known as the "non-observed economy", and several publications have been dedicated to measuring it, notably *Measuring the Non-Observed Economy – a Handbook*. As the techniques in the handbook make clear, a specific measure of the non-observed economy is not important in itself. Attention focuses on ensuring that the measurement of total output and value added is complete or "exhaustive". The term non-observed economy is used in the context of achieving exhaustiveness of the integrated framework of national accounts, focusing on GDP in the context of the production of goods and services. In the same way, non-observed trade is used to describe cross border trade that is difficult to measure in the context of exhaustiveness.

39.82 There is a large overlap between the non-observed economy and the informal sector. (Here, the focus is on the informal sector rather than the informal economy, because the activities of the informal sector are entirely within the production boundary applied in the integrated framework of the SNA, and can thus be compared to the non-observed economy.) However, while the non-observed economy and the informal sector overlap, neither is a complete subset of the other. This can be seen in figure 39.2. The solid circle represents the non-observed economy and the dotted circle the informal sector. Thus, the overlap consists of activities that are not observed and undertaken informally but there are some activities that are not observed but are not undertaken informally and some that are undertaken informally but are observed. The relative size of the three segments in figure 39.2 will vary from country to country.

Figure 39.2: The non-observed economy and the informal sector

39.83 Efforts to cover the non-observed economy ensure that all enterprises are covered in statistical estimates even if not covered by statistical enquiries. Some of the supplementary estimates may well relate to those activities of household unincorporated enterprises considered to be informal, but some will relate to large enterprises, not regarded as informal. In addition, the non-observed economy aims to cover misreporting in large enterprises, whether this is inadvertent or deliberate.

39.84 Within the informal sector, some information may be captured statistically. Consider a household that lets rooms to visitors for one or several nights. The activity cannot be treated as a quasi-corporation because it is impossible to make a clear separation of costs from regular household costs and to partition that fraction of the house treated as an asset associated with the letting of rooms from its main function as a family home. However, the value of the letting activity may be captured in a survey directed at tourism activities, for example.

39.85 Other examples might be considered. Street traders or taxi drivers may be both not observed and informal. A small food producer may be formal but too small to be covered by statistical enquiries and therefore not observed. Teaching assistants may be informal but observed. The situation is complicated by the fact that street traders, taxi drivers, small food producers and teaching assistants may be formal in some countries and informal in others, just as they may be observed in some and not in others.

39.86 It should be noted that all economies have both non-observed parts of their economies and informal enterprises, though the scale of each and the policy interest in identifying them may vary. More detailed information about the scope and measurement of the non-observed economy is available in publications such as the one mentioned in paragraph 39.81.

G. Guidelines and handbooks on the informal economy and the non-observed economy

39.87 Significant advances in methodology have taken place in fields related to the informal economy. Also, countries have gained extensive experience in collecting and working with data on the informal sector. These developments are highlighted in various guidelines and handbooks on statistics on the informal economy as well as handbooks on the measurement of the non-observed economy in the integrated framework of the SNA.

- As discussed in this chapter, the *21st ICLS Resolution Concerning Statistics on the Informal Economy* provides the standards for statistics on informality.
- The ILO also prepared a manual in 2013 for preparing estimates of the informal sector and informal employment, *Measuring Informality: A Statistical Manual on the Informal Sector and Informal Employment*. Although this manual pre-dates the latest standard presented in the *21st ICLS Resolution*, it nevertheless provides useful guidance on practical aspects of collecting and compiling informality statistics.
- A wider set of indicators to further support the national production of informality statistics can also be found in the ILO Statistics on the Informal Economy page available at: https://ilostat.ilo.org/topics/informality/.
- Chapter 6 of the Eurostat manual, *Essential SNA: Building the basics* provides a practical overview of how to address exhaustiveness, the non-observed economy, and statistics on informality. Eurostat has also developed a "Tabular Approach to Exhaustiveness" which is used to help ensure comparability.
- Research on statistical methods for improving the exhaustiveness of measures of economic production led to the preparation of the handbook *Measuring the Non-Observed Economy - a Handbook*.
- The UNECE published *Non-Observed Economy in National Accounts: Survey of Country Practices*, which summarizes practices as of that date in measuring non-observed economic activities to ensure the exhaustiveness of their national accounts.
- Eurostat published the *Handbook on the Compilation of Statistics on Illegal Economic Activities in*

National Accounts and Balance of Payments, which provides guidance on the concepts and definitions of illegal activities, recommended methodological frameworks for compiling data, and data sources and statistical techniques for recording illegal economic activities.

G. Supplementary material

Annex 1: International standards for macro-economic statistics, and the links with the SNA

A. Introduction

A1.1 There are four international standards for macroeconomic statistics that have a close relationship with the System of National Accounts. They are:

- The IMF's *Balance of Payments and International Investment Position Manual Seventh Edition (BPM7)*, which serves as the standard framework for statistics on the transactions and positions between an economy and the rest of the world and facilitates analysis of balance of payments and related issues.
- The IMF's *Government Finance Statistics Manual (GFSM) 2014*, which describes the government finance statistics (GFS) framework and is designed to support fiscal analysis.
- The IMF's *Monetary and Financial Statistics Manual and Compilation Guide (MFSMCG) 2016*, which provides guidelines for the compilation and presentation of monetary statistic within a financial statistics framework, as a critical input for monetary policy formulation and monitoring.
- The United Nations et al *System of Environmental-Economic Accounting (SEEA),* which organizes and presents statistics on the environment and its relationship with the economy. The *SEEA Central Framework* 2012 is a multipurpose conceptual framework that describes the interactions between the economy and the environment, and the stocks and changes in stocks of environmental assets. The *SEEA Ecosystem Accounting* 2021 provides an integrated and comprehensive statistical framework for organizing data about habitats and landscapes, measuring the ecosystem services, tracking changes in ecosystem assets, and linking this information to economic and other human activity.

A1.2 This annex provides a concise description of these standards, including the key linkages between the standards and the integrated framework of the SNA. For more detailed information, the relevant standards should be consulted.

B. Balance of Payments and International Investment Position Manual

1. Introduction

A1.3 The seventh edition of the Balance of Payments and International Investment Position Manual (BPM7) serves as the standard framework for statistics on the positions, transactions, and other changes in financial assets and liabilities between an economy and the rest of the world.

A1.4 The main objectives of *BPM7* are:

a) To provide and explain concepts, definitions, classifications, and conventions for statistics on the external accounts, i.e., the international investment position (IIP), the balance of payments (BOP), and other changes in financial assets and liabilities;

b) To enhance international comparability of data through the promotion of guidelines adopted internationally;

c) To show the links of the external accounts to other macroeconomic statistics and promote consistency between different data sets;

d) To provide a brief introduction to uses of data on the external accounts of an economy; and

e) To provide principles and guidelines to improve the way the external accounts are communicated and disseminated.

A1.5 The external accounts for an economy summarize the economic relationships between residents of that economy and non-residents. The external accounts framework is composed of three major interconnected elements:

a) the international investment position (IIP), which is a statement that shows at a point in time the value of financial assets of residents of an economy that are claims on non-residents or are gold bullion held as reserve assets and of the liabilities of residents of an economy to non-residents;

b) the balance of payments, which is a statement that summarizes economic transactions between residents and non-residents during a specific time period; and

c) the other changes in financial assets and liabilities accounts, which is a statement that shows other flows that reconcile the balance of payments and IIP for a specific period, by showing changes due to economic events other than transactions between residents and non-residents (i.e., revaluations and other changes in the volume of assets and liabilities).

A1.6 These accounts correspond to the balance sheets, the transaction accounts (current accounts, capital account and financial account) and the other changes in assets accounts, respectively, as presented in the SNA sequence of economic accounts. However, what appear as revenues/(changes in) assets in the rest of the world accounts of the SNA's sequence of economic accounts appear as expenditures/(changes in) liabilities in the external accounts and vice versa.

A1.7 The external accounts provide an integrated framework for the analysis of an economy's international economic relationships, including its international economic performance, exchange rate policy, reserves management, and external vulnerability.

2. Accounting principles

Valuation

A1.8 *BPM7* uses the same valuation principles as the ones applied in the integrated framework of the SNA. In both cases, exchange values i.e., observed market prices or market-price equivalents) are used for recording transactions, while positions are valued as if they were being acquired on the date to which the balance sheet, or IIP, relates, with nominal values used for some positions in instruments where market prices are not observable.

A1.9 In the external accounts (and in the integrated framework of the SNA), the valuation of exports and imports of goods is a special case where a uniform valuation point is used, namely the free-on-board value at the customs frontier of the exporting economy. This treatment brings about consistent valuation between exports and imports; see paragraphs 4.177 to 4.179 for a more detailed discussion.

A1.10 In international transactions, there may be motivations for under- or over-invoicing in order to evade taxes or exchange controls, so *BPM7* provides guidance on how to develop market-equivalent prices when these cases are identified, and how to make the necessary adjustments needed to other items affected. However, in practice adjustments are usually not made, mainly for reasons of feasibility and (international) consistency.

Time of recording

A1.11 *BPM7* uses the same time of recording principle as the integrated framework of the SNA. That is, flows are recorded at the time economic value is created, transformed, exchanged, transferred or extinguished. This means that transactions in goods, non-produced non-financial assets and financial assets are recorded when economic ownership changes, transactions in services are recorded when the services are provided, and distributive transactions are recorded at the moment related claims arise.

A1.12 In practice, the change of economic ownership of goods is often taken to be when the goods are recorded in customs data. To the extent that there are differences between customs data and actual changes in ownership, such as for high-value capital goods or goods sent on consignment (that is, dispatched before they are sold), adjustments are made. For high-value capital goods, in the absence of information, the existence of stage payments could be used as an indication of a progressive transfer of ownership.

A1.13 While not an exception to the recording basis of the change of economic ownership, merchanting transactions – that is, where an owner buys and resells goods in the same condition without the goods passing through the territory of the owner – are presented somewhat differently to other international transactions in the external accounts and the integrated framework of the SNA. In the case of

merchanting, the acquisition of the goods is identified as a change of ownership but shown as a negative export rather than as an import on acquisition of the goods and as a positive export on disposal. If the goods are acquired in one period and not disposed of until a subsequent period, they will appear in changes in inventories of the merchant even though these inventories are held abroad. A consequence of this treatment is that in the *BPM7* accounts, merchanting appears as transactions in goods.

Netting

A1.14 The same rules on netting are applied in *BPM7* as in the integrated framework of the SNA. In general, netting is not advised except in the special case of recording transactions in financial assets and liabilities, where acquisitions and disposals of the same type of asset (or incurrence and redemption of the same type of liability) are netted. However, there is no netting of assets against liabilities, even of the same sort of instrument and no netting across different sorts of instruments, although in some cases, a clear distinction between assets and liabilities may not be feasible (such as for financial derivatives) and as such they may be recorded on net basis. Positions in financial assets and liabilities are recorded on a gross basis.

Units and residence

A1.15 The external accounts and the integrated framework of the SNA are built on the same definitions of institutional units and residence, as set out in chapter 5 on Institutional units and sectors, economic territory and residence.

3. The external accounts of an economy

The international investment position (IIP)

A1.16 The IIP is a statistical statement that shows at a point in time the value of financial assets of residents of an economy that are claims on non-residents or are monetary gold, and of the liabilities of residents of an economy to non-residents. The difference between the assets and liabilities is the net position in the IIP and, except for the portion of the difference reflecting monetary gold, represents either a net claim on or a net liability to the rest of the world.

A1.17 The IIP represents a subset of the assets and liabilities included in the balance sheet of the SNA's sequence of economic accounts. In addition to the IIP, the SNA balance sheet incorporates non-financial assets as well as, for the balance sheets of the domestic institutional sectors, financial assets and liability positions between residents. There is no external balance sheet of non-financial assets as they are always considered domestic assets (i.e., owned by residents) and do not have a counterpart non-resident liability.

The balance of payments

A1.18 The balance of payments is a statistical statement that summarizes transactions between residents and non-residents during a period. It consists of three main accounts: the current account, the capital account and the financial account.

A1.19 Under the double-entry accounting system that underlies the balance of payments, each transaction is recorded as consisting of two entries, and the sum of the credit entries (revenues or transactions in liabilities in the SNA) and the sum of the debit entries (expenditures or transactions in assets in the SNA) is the same. The two entries may be recorded in the same account (e.g., both within the financial account) or in different accounts (e.g., one in the current or capital account, another in the financial account).

A1.20 The different accounts within the balance of payments are distinguished according to the nature of the economic resources provided and received.

Current account

A1.21 The current account shows transactions in goods, services, earned income, and transfer income between residents and non-residents. The balance on this account is known as the "current account balance". The

current account balance shows the difference between the sum of exports and income receivable and the sum of imports and income payable (exports and imports refer to both goods and services, while income refers to both earned and transfer income). The value of the current account balance equals the saving-investment gap for the economy.

Goods and services account

A1.22 The goods and services account consists of imports and exports of goods and services. Goods and services are recorded when there is a change of economic ownership from a unit in one economy to a unit in another country. Although there is usually a physical movement of goods when there is a change of ownership, this is not necessarily the case. In the case of merchanting, goods may change ownership and not change location until they are resold to a third party.

A1.23 The balance of payments gives emphasis to the distinction between goods and services. This distinction reflects policy interests; for example, there are separate international treaties covering goods and services.

Goods account

A1.24 The goods account (a sub account of the goods and services account) shows international transactions in goods (exports and imports of goods). In *BPM7* goods are physical, produced objects, over which ownership rights can be established and whose ownership can be transferred from one institutional unit to another by engaging in transactions on markets. In addition, electricity, which is not a physical object, is shown in the goods account. Goods may be used to satisfy the needs or wants of households or the community or used to produce other goods or services. The production of a good can be separated from its subsequent sale or resale.

Services account

A1.25 The services account (a sub account of the goods and services account) shows international transactions in services. Services are the result of a production activity that changes the conditions of the consuming units or facilitates the exchange of products or financial assets. Transactions in services are recorded in the balance of payments when the services are provided by a resident to a non-resident unit.

A1.26 Services are not generally separate items over which ownership rights can be established and cannot generally be separated from their production. However, some knowledge-capturing products, such as computer software and other intellectual property products, may be traded separately from their production, like goods. The cross-border transactions in those products (e.g., computer software, audiovisual products, research and development, and other intellectual property products and/or knowledge capturing products) are also recorded as services in balance of payments, except when provided on physical media with right to perpetual use. In addition, cross-border transactions concerning the use of property rights related to marketing assets (such as franchises, trademarks, and brand names) are recorded as services.

Earned income account

A1.27 The earned income account in the external accounts records incomes earned by institutional units as a consequence of their involvement in processes of production or their ownership of financial assets. The entries in this account include remuneration of employees and property income.

Transfer income account

A1.28 The entries in this account are current transfers. Current transfers may be made in cash or in kind. Several types of current transfers are particularly important in the external accounts, especially current international cooperation and personal transfers in cash or in kind made or received by resident households to or from nonresident households.

Capital account

A1.29 The capital account records acquisitions and disposals of non-produced non-financial assets, such as land sold to embassies and sales of leases and licenses, and crypto assets without a corresponding liability designed to act as a medium of exchange, as well as capital transfers, that is, the provision of resources for capital purposes by one party without anything of economic value being supplied as a direct return to that party. The capital account balance shows the difference between the sum of disposals of non-produced non-financial assets and capital transfers receivable and the sum of acquisition of non-produced non-financial assets and capital transfers payable.

A1.30 The sum of the balances on the current and capital accounts represents the net lending (surplus) or net borrowing (deficit) by the economy with the rest of the world.

Financial account

A1.31 The financial account records all transactions in financial assets and liabilities that take place between residents and non-residents. The financial account shows the functional categories, sectors, instruments, and maturities used for net international financing transactions. The financial account is classified according to functional categories (as discussed below) and financial instruments. The functional categories convey more information about the motivation and relationship between the parties, which are of interest for international economic analysis.

A1.32 The financial account balance is the difference between the net acquisition of financial assets and the net incurrence of liabilities resulting from transactions between residents and non-residents. This is conceptually equal to the sum of the balances on the current and capital accounts. In other words, the financial account shows how the net lending to or borrowing from non-residents is financed. In practice, the two balancing items may not be equal, and the difference is recorded as a statistical discrepancy.

Relationship between the balance of payments accounts and the integrated framework of the SNA

A1.33 The export of goods and services that are recorded in the balance of payments are the result of production processes that take place in the exporting country and as such are recorded in the SNA production account as the production of outputs. Imports of goods and services on the other hand are not the result of production in the importing country. Imports of capital equipment are recorded as acquisitions of fixed assets (gross fixed capital formation) in the capital account of the SNA's sequence of economic account. Other imports are recorded as intermediate consumption in the SNA production account or as final consumption expenditure in the SNA use of income accounts. If imports of goods are not used for consumption in the period in which they are imported, then they are recorded as changes in inventories in the SNA capital account.

A1.34 The balance of payments earned income account corresponds to the earned income accounts in the SNA.

A1.35 The balance of payments transfer income account corresponds to the SNA income transfers other than social transfers in-kind account.

A1.36 As there is no balance of payments account corresponding to the SNA use of income account, in the external accounts, the adjustment for the change in pension entitlements term appears as a single item after the balance of payments transfer income account (cross-border pensions are relatively minor for most economies).

A1.37 The elements of the balance of payments capital account are more restricted than those covered in the capital account of the SNA's sequence of economic accounts. Transactions in produced assets are not recorded in the balance of payments capital account, because they are recorded as exports and imports of goods (and possibly services).

A1.38 The balance of payments financial account is analogous to the financial account of the SNA's sequence of economic accounts. However, the primary classification in the balance of payments financial account (and IIP) is based on functional categories, whereas in the SNA financial account financial transactions with non-residents (and positions shown in the balance sheet) are presented on an asset and liability basis, by instrument. The BPM7 functional categories are further subdivided by instrument, which makes it possible to link them to the corresponding SNA items.

Other changes in financial assets and liabilities account

A1.39 In the external accounts, the other changes in financial assets and liabilities account shows changes in financial positions that are not transactions. These changes are also called "other flows" and consist of revaluations and other changes in the volume of financial assets and liabilities. This account is analogous to the other changes in assets and liabilities accounts in the SNA's sequence of economic accounts, although the SNA accounts also include other changes in non-financial assets. In the external accounts, other changes are recorded only for financial assets and liabilities because the IIP contains only external financial assets and liabilities, including monetary gold.

A1.40 International financial assets and liabilities may be subject to revaluation changes and to various types of other changes in the volume of assets and liabilities, for example, monetization and de-monetization of gold, or the unilateral cancellation of a claim by a debtor. Because instruments are often denominated in foreign currencies and analysis of the effect of exchange rate movements is particularly important, in the external accounts revaluations are broken down into exchange rate changes and other price changes.

A1.41 The external accounts financial account plus the other changes in assets and liabilities account, jointly referred to as accumulation accounts in *BPM7*, explain the change in the IIP between the beginning and the end of a reference period. It should be noted that the use of the term 'accumulation accounts' in *BPM7* differs from that in the SNA sequence of economic accounts, as the former excludes the capital account whereas it is included in the latter.

4. *BPM7* functional categories

A1.42 The *BPM7's* functional categories are the primary classification used for each of investment income, financial transactions and positions in the external accounts. The following five categories are identified:

- direct investment;
- portfolio investment;
- financial derivatives (other than reserves) and employee stock options;
- other investment; and
- reserve assets.

A1.43 The functional categories are built on the classification of financial instruments, but with an additional dimension that takes into account some aspects of the relationship between the parties and the motivation for investment. As a result, the different categories exhibit different patterns of behaviour. For example, there is a different type of relationship between the parties in direct investment relationship compared to portfolio investment relationship. Direct investment is established when the investment gives rise to control or a significant degree of influence on the non-resident enterprise. It is associated with a lasting relationship although it may be short-term. In addition to financial resources, direct investors often supply additional factors such as know-how, technology, management and marketing. As well, related companies are more likely to trade with and lend to each other. In contrast, portfolio investors typically have a smaller role in the decision-making process of the enterprise, with potentially important implications for future flows, and for the volatility of the prices and volumes of positions. Portfolio investment differs from other investment in that it provides a direct way to access financial markets and so can provide liquidity and flexibility.

A1.44 Reserve assets include a range of instruments controlled by the monetary authority. Reserve assets are identified as being readily available to meet balance of payments financing needs and for intervention in the foreign exchange market and for other related purposes.

A1.45 The functional classification is needed because the instrument classification alone does not fully reflect these behavioural differences. For example, a loan can appear under direct investment or other investment, but the different nature of the relationship between the parties means that the risks and motivations behind the transaction tend to differ. A direct investment loan is more likely to be provided and generally involves less vulnerability on the part of the borrowing economy because of the relationship between the parties.

A1.46 The functional categories are explained in more detail in chapter 33 on Transactions and positions between residents and non-residents and in BPM7.

C. Government Finance Statistics Manual

1. Introduction

A1.47 The *Government Finance Statistics Manual (GFSM)* 2014 describes the government finance statistics (GFS) framework, which is designed to support fiscal analysis. The GFSM (i) provides the economic and statistical reporting principles to be used in compiling the statistics on government finance; (ii) describes guidelines for presenting fiscal statistics within an analytic framework that includes appropriate balancing items; and (iii) is harmonized with other macroeconomic statistical guidelines.

A1.48 At the time of writing, the *GFSM* is undergoing revision, with one of the aims to harmonize it with the 2025 SNA.

A1.49 GFS are designed to provide statistics that enable policymakers and analysts to present and assess developments in the financial operations and financial position of government. GFS also allow for an assessment of the liquidity and sustainability of the finances of the general government sector or the public sector in a consistent and systematic manner. The GFS framework can be applied to a specific level of government, can capture relations between various levels of government, or can cover the consolidated public sector.

A1.50 The GFS framework integrates stock positions and economic flows that are presented in several statements. The Statement of Operations and the Statement of Sources and Uses of Cash record the results of all transactions during a reporting period. The Statement of Other Economic Flows summarizes other economic flows including price changes and a variety of other economic events that affect the volume of assets and liabilities, such as debt write-offs and catastrophic losses. The Balance Sheet is a statement of the stock positions of non-financial and financial assets and liabilities.

2. Accounting principles

Sectors

A1.51 The GFS framework uses the same institutional units and same sectors as the integrated framework of the SNA as described in chapter 5 on Institutional units and sectors, economic territory, and residence. The GFS covers the general government and the public sectors. These sectors are defined in terms of institutional units, which are economic entities that are capable, in their own right, of owning assets, incurring liabilities, and engaging in economic activities and transactions with other entities. The public sector consists of all resident institutional units controlled directly, or indirectly, by resident government units – that is, all units of the general government sector and resident public corporations. In the GFS framework statistics are compiled for the consolidated general government and public sector, as well as for all the subsectors of the general government and the public corporations subsector.

Time of recording

A1.52 The GFS framework is based on accrual recording. In the accrual basis of recording, flows are recorded at the time economic value is created, transformed, exchanged, transferred, or extinguished. In other words, the effects of economic events are recorded in the period in which they occur, irrespective of whether cash was received or paid, or was due to be received or paid. This is consistent with the time of recording in the integrated framework of the SNA.

A1.53 Unlike the SNA, the *GFSM* also accommodates cash recording through the Statement of Sources and Uses of Cash. In the cash basis of recording, flows are recorded when cash is received or disbursed, which may differ from the period in which relevant the accrual transaction takes place. The integrated framework of the SNA does not have any provision for cash recording; however, the *GFS* Statement of Sources and Uses of Cash provides analytically useful information which allows for liquidity management and often also for cash budget management. While statistics based on cash flows are of analytical value, they do not fully meet all government reporting needs. Non-monetary flows are not

recorded, since no cash flows are involved in these transactions. Therefore, the cash basis of recording does not fully record all government economic activity and resource flows.

Valuation

A1.54 In the GFS framework, consistent with the integrated framework of the SNA, all flows and stock positions should be measured at exchange prices (i.e., observed market prices or market-price equivalents). Exchange prices refer to current exchange value – that is, the value at which goods, services, labour, or assets are exchanged or else could be exchanged for cash (currency or transferable deposits). Flows recorded on an accrual basis are valued at the exchange values at which these flows take place, while stock positions are valued at the exchange prices prevailing on the balance sheet date. Cash flows in the Statement of Sources and Used of Cash are valued at the monetary value of the cash flows.

Consolidation

A1.55 Consolidation is a method of presenting statistics for a set of units as if they constituted a single unit. In the GFS framework, the data presented for a group of units are consolidated. In particular, statistics for the general government sector and each of its subsectors are presented on a consolidated basis. When units of the public sector are included in a presentation, the data for public corporations are presented in two ways: as separate subsectors for the financial public corporations and for the non-financial public corporations; and together with general government units for the consolidated public sector. In both cases, the statistics are presented on a consolidated basis within each group.

A1.56 When compiling GFS general government or public sector statistics, two types of consolidation may be necessary – namely, intra-sectoral consolidation and intersectoral consolidation:

- Intra-sectoral consolidation is consolidation within a particular subsector to produce consolidated statistics for that subsector; and
- Intersectoral consolidation is consolidation between subsectors of the public sector to produce consolidated statistics for a particular grouping of public sector units.

A1.57 Two types of transactions that appear to take place between two government units are never consolidated because they are rerouted to other units. The first is that all employer social contributions, whether paid to social security or to government pension funds, are treated as being paid to the employee as part of remuneration of employees (known in *GFSM 2014 as "*compensation of employees") and then paid by the employee to the fund. The second is that all taxes withheld by government units from the remuneration of their employees, such as pay-as-you-earn (PAYE) taxes, and paid to other governments are treated as being paid by the employees. The government employer is simply the collecting agent in this case for the second government unit. However, taxes on gross payroll and labour force that are not treated as social contributions should be consolidated when they are significant and can be identified. While the same approach to rerouting is also followed in the SNA, the integrated framework of the SNA discourages consolidation.

A1.58 Consolidation in the GFS framework do not affect balancing items of the consolidated subsector. For example, a grant (or transfer) from a central government to a local government unit is consolidated by eliminating the expenditure from central government and the revenue from the local government, thus leaving the net operating balance of the general government sector unchanged.

Employment-related pension schemes

A1.59 The GFS framework requires that a liability be recognized for all employment-related pension obligations of the general government and/or public sector employees, whether they are funded or unfunded, whereas the integrated framework of the SNA allows some flexibility in that certain unfunded employment-related pension obligations may be excluded from the sequence of economic accounts and instead shown in a supplementary table. As a result, under the GFS framework, all these employment-related pension contributions and benefits are recorded as transactions in financial assets and liabilities rather than as social contributions and social benefits.

3. GFS Statements

Statement of Operations

A1.60 The Statement of Operations presents details of transactions in revenue and expense (in the SNA sequence of economic accounts referred to as revenues and expenditures, although the GFS concepts of revenue and expense also include capital transfers), as well as the net investment in non-financial assets, the net acquisition of financial assets, and the net incurrence of liabilities. The Statement of Operations records transactions on an accrual basis.

Revenue

A1.61 A GFS revenue transaction is one that increases net worth. In the GFS framework, the concept of revenue is defined to include all revenues acquired by government as recorded in the current accounts of the SNA sequence of economic accounts and capital transfers receivable recorded in the capital account of the SNA. Specifically, revenue can be determined as follows:

Revenue

equals Taxes,

plus Social contributions,

plus Other current revenue,

plus Capital transfers receivable.

A1.62 Government revenue is usually dominated by compulsory levies in the form of taxes and social contributions. However, natural resource rich countries may also record sizeable other revenues in the form of rent. In addition, for some levels of government, grants (transfers from other government units and international organizations) are a major source of revenue. Other general categories of revenue include fines, penalties, and forfeits, property income, sales of goods and services and miscellaneous transfers other than grants.

A1.63 An advantage of the government finance presentation is that all taxes can be presented as one category of revenue, with subclassifications according to the basis on which the tax was levied. In particular, both current and capital taxes can be shown under a single heading. In the integrated framework of the SNA, taxes are recorded in several of the accounts and tables.

A1.64 Other current revenue covers property income, sales of goods and services, fines, penalties and forfeits, transfers not elsewhere classified (voluntary transfers other than grants), and premiums, fees, and claims related to non-life insurance and standardized guarantee schemes. The distribution of goods and services that are not sold at all, or sold for prices that are not economically significant, does not accord with the general notion of revenue as a transaction that increases net worth. As a result, only actual sales of goods and services, or goods and services produced by government but provided as remuneration in kind of employees are included in revenue. (The goods and services provided as compensation in kind are treated as revenue because they offset expenditure.)

A1.65 Transfers from one government unit to another, often from the central or a state government to a lower level of government, can be quite important sources of government revenue. The GFS presentation allows all of these receipts to be recorded in a separate category of revenue, labelled grants. Other transfers, including subsidies and taxes, normally amount to much less and are reported separately. Property income may or may not be an important source of revenue, but in either case, it relates directly to the same category as in the allocation of earned income account except for the part of interest payable to financial intermediaries that is treated as implicit financial services on loans and deposits (known as "financial intermediation services indirectly measured (FISIM)"in *GFSM 2014)* in the integrated framework of the SNA but not in the GFS presentation.

Expense

A1.66 A GFS expense transaction is one that decreases net worth. In the GFS, the concept of expense is defined to include all expenditures incurred by government as recorded in the current accounts of the SNA

sequence of economic accounts and capital transfers payable as recorded in the capital account of the SNA. Specifically, expense can be determined as follows:

Expense

equals Production expenses (remuneration of employees, intermediate consumption and depreciation),

plus Interest payable,

plus Subsidies,

plus Grants,

plus Social benefits,

plus Other current expenses,

plus Capital transfers payable.

A1.67 The GFS framework uses a double entry system rather than the quadruple entry system used in the framework of the SNA. This difference and the absence of a production account in the GFS framework makes it impossible to show both the cost structure of own-account production and its final use. For instance, the salaries of employees engaged in own-account fixed capital formation are directly classified as gross capital formation and not as remuneration of employees. Conversely, the salaries of employees who produce social benefits in kind are recorded as remuneration of employees and not again as (part of) expense on social benefits in kind. The GFS presentation also uses some labels with definitions that differ from those in the integrated framework of national accounts. For example, expense on implicit financial services on loans and deposits and insurance services are not distinguished from interest and insurance premiums, respectively.

A1.68 Governments typically produce many services and some goods and then distribute them free or at prices that are not economically significant. In the integrated framework of the SNA, the costs of producing these goods and services are recorded as expenditures when they are produced and again, after subtracting any direct monetary revenues, as final consumption expenditures of government. These costs are recorded once in the GFS presentation, according to the economic nature of the expenditure incurred, to avoid unnecessary duplication.

A1.69 In GFS, pension benefits paid to retired public sector employees and their survivors are considered liquidations of pension liabilities rather than a current expense. They are therefore not included in social benefits. In GFS, social contributions exclude contributions of public sector employees to autonomous and non-autonomous pension funds and to unfunded employment-related schemes that provide pension and other retirement benefits. These transactions are recorded in GFS as incurrence of liabilities for future pension and other retirement benefits payable. As a result, GFS does not need the item for adjustments in the change in pension entitlements, as included in the SNA sequence of economic accounts.

Net operating balance

A1.70 The GFS net operating balance is defined as revenue less expense. It is the balance of all transactions that affect net worth. It provides a measure of the sustainability of government policies as it represents the resources acquired or consumed by the government's current operations. It is conceptually equivalent to net saving, plus capital transfers receivable, minus capital transfers payable in the SNA sequence of economic accounts. However, in practice differences in calculated values may arise due to the difference in treatment of government employment-related pension funds.

Transactions in non-financial assets

A1.71 Transactions in non-financial assets affect the stock positions of non-financial assets. Transactions can change stock positions of non-financial assets in different ways, and all must be accounted for. Included are purchases, less sales, of newly produced and existing non-financial assets, own-account fixed capital formation, significant renovations, reconstructions or enlargements to existing assets, depreciation (known as consumption of fixed capital in *GFSM 2014*), and additions to and withdrawal from

inventories. In *GFSM 2014*, depletion of natural resources was not considered a transaction but rather an other change in volume, whereas in the 2025 SNA depletion is recognized as a transaction. This change is anticipated to be made in future *GFSM* updates.

A1.72 Transactions in non-financial assets that are recorded in the GFS framework are recorded in the SNA capital account, although the scope of that account is broader as it also includes capital transfers. In the *GFS*, capital transfers are recorded as a revenue or expense.

A1.73 Transactions in non-financial assets are recorded on a gross basis in the GFS framework, with the net investment in financial assets calculated as acquisitions less disposals less depreciation.

Net lending or net borrowing

A1.74 Net lending or net borrowing in the GFS framework can be calculated as the net operating balance less the net investment in non-financial assets or total revenue less total expenditure (which is the sum of expenses and net investment in non-financial assets). It represents the amount the government has available to lend or must borrow to finance its non-financial operations.

A1.75 Conceptually, net lending/net borrowing is equivalent to the net lending/net borrowing calculated in the SNA sequenced of economic accounts. However, in practice differences in calculated values may arise due to the difference in treatment of government employment-related pension funds.

Financial transactions

A1.76 Financial transactions are transactions that affect stock positions of financial assets and liabilities. Transactions in financial assets and liabilities explain how net lending/net borrowing is financed by means of changes in holdings of financial assets and liabilities – that is, total financing. Net lending or net borrowing is conceptually equal to the net acquisition of financial assets minus net incurrence of liabilities, although in practice a statistical discrepancy could appear because of using different sources and of possible errors and omissions.

A1.77 Conceptually, the transactions in financial assets and liabilities that are recorded in GFS are identical to transactions in the financial account of the SNA sequence of economic accounts. However, as noted before, in practice differences in calculated values may arise due to the difference in treatment of government employment-related pension funds.

A1.78 In the GFS framework, all transactions that increase a unit's holdings of financial assets are labelled acquisitions. All transactions that decrease a unit's holdings of assets are labelled disposals. Transactions that increase liabilities are referred to as the incurrence of a liability. Transactions that decrease liabilities are variously titled repayments, reductions, withdrawals, redemptions, liquidations, or extinguishments. Thus, the results of transactions in a particular category of financial assets can be presented either as total acquisitions and total disposals or as net acquisitions. Similarly, changes in liabilities can be presented as total incurrences and total reductions or as net incurrences. Transactions that change a category of financial assets are never combined with transactions that change the same category of liabilities. That is, in GFS, the net acquisition of loans is not presented as the increase in loans held as financial assets minus the increase of loans as liabilities. All of this is very similar to the treatment in the SNA sequence of economic accounts.

Statement of sources and uses of cash

A1.79 The GFS Statement of Sources and Uses of Cash shows the total amount of cash generated or absorbed by operating activities, transactions in non-financial assets, and transactions involving financial assets and liabilities other than the financial asset currency and deposits (cash) itself. The net change in the stock of cash is explained by the sum of the net cash flows from these three sources.

A1.80 The Statement of Sources and Uses of Cash records all transactions using the cash basis of recording, as explained above.

A1.81 There is no equivalent to the Statement of Sources and Use of Cash in the SNA sequence of economic accounts as the SNA does not record transactions on a cash basis.

Statement of other economic flows

A1.82 Other economic flows are recorded the GFS Statement of Other Economic Flows. Other economic flows are changes in the volume or value of assets or liabilities that do not result from transactions. There are two major categories of other economic flows that change net worth:

- A holding gain or loss is a change in the monetary value of an asset or liability resulting from changes in the level and structure of prices, excluding qualitative or quantitative changes in the asset or liability.
- Other changes in the volume of assets are any changes in the value of an asset or liability that do not result from a transaction or a holding gain. Other changes in the volume of assets result from events that change the quantity or quality of an existing asset or liability, events that add a new asset or liability to the balance sheet or delete an existing asset or liability from the balance sheet, and events that require a reclassification of existing assets or liabilities.

A1.83 The balancing item to this statement is described as the change in net worth due to other economic flows, which is defined as the sum of the change in net worth due to holding gains or losses and the change in net worth due to other changes in the volume of assets or liabilities.

A1.84 The GFS statement of other economic flows is analogous to the other changes in assets and liabilities accounts in the SNA sequence of economic accounts. However, unlike the SNA, GFS do not generally make the distinction between neutral and real holding gains and losses.

Balance sheet

A1.85 The balance sheet shows the values of the stock positions of assets owned and of the liabilities owed by government units or groups of units, drawn up in respect of a particular point in time. The net worth of an institutional unit (or grouping of units) is the total value of its assets minus the total value of its liabilities. Net worth can also be viewed as a stock position resulting from the transactions and other economic flows of all previous periods. In the GFS balance sheets non-financial assets are distinguished from financial assets and liabilities.

A1.86 The GFS balance sheet is analogous to the SNA sequence of economic accounts' balance sheet for the general government and the public sector, or subsectors thereof.

4. Classification of the functions of government

A1.87 The classification of expenditure transactions using the *Classification of Functions of Government (COFOG)* is integral to the GFS framework. This functional classification shows the purpose for which expenditure is undertaken. These purposes may differ significantly from the administrative arrangements of governments. For example, an administrative unit responsible for health services may in addition to health expenditure undertake some activities with an educational purpose, such as training of medical professionals.

D. Monetary and Financial Statistics Manual and Compilation Guide

1. Introduction

A1.88 The *Monetary and Financial Statistics Manual and Compilation Guide (MFSMCG) 2016* provides guidelines for the compilation and presentation of monetary statistics as well as an orientation to the financial statistics framework.

A1.89 For monetary and financial statistics (MFS) the overarching framework is the System of National Accounts (SNA). In this respect, the basic principles and concepts underlying MFS are consistent with those of the SNA.

A1.90 The *MFSMCG* describes a conceptual framework for the analytical presentation of monetary statistics, which provides a critical input for monetary policy formulation and monitoring. The financial statistics covered in the *MFSMCG* support the assessment of financial system stability by highlighting the role of financial corporations (FCs) in financial intermediation, the relative significance of different financing

types across sectors and subsectors, and the interconnections among sectors through debtor and creditor relationships.

Monetary statistics

A1.91 Monetary statistics cover the stocks and flows of the assets and liabilities of the resident FCs sector with respect to all other resident institutional sectors and non-residents. Based on the concepts of the SNA, monetary statistics provide a framework for analysing the relationship between the FCs sector and other institutional sectors, including through broad money, credit aggregates, and liquidity measures.

A1.92 Monetary statistics comprise a set of stock and flow data that are organized in two hierarchical frameworks, namely sectoral balance sheets and analytical surveys. The analytical surveys are derived from the respective sectoral balance sheets, in which the sectoral balance sheet data are rearranged into an analytical format.

Financial statistics

A1.93 Financial statistics cover the stock and flows of financial assets and liabilities between all sectors of the economy and with non-residents, on a from-whom-to-whom basis where applicable. Thus, financial statistics extend the range of monetary statistics to include all sectors of the economy and non-residents.

A1.94 The framework for financial statistics is the *SNA* balance sheets and accumulation accounts, because these accounts provide an internationally recognized set of guidelines for integrating financial stocks and flows into a complete system of accounts. The financial statistics are organized and presented in formats designed to show financial flows between the sectors of an economy and non-residents, and corresponding financial asset and liability positions. Sectoral balance sheets of the FCs subsectors contain a significant portion of the data needed to compile financial statistics.

A1.95 Financial statistics are compiled and presented with varying degrees of detail depending on the availability of source data and analytical needs. Common presentation formats of financial statistics include flow-of-funds statistics, the balance sheet approach matrix, and financial sectoral accounts.

2. Accounting principles

A1.96 The integral links between the MFS, and the financial account and balance sheets of the *2008 SNA* are underpinned by consistency in principles and concepts such as residence and sectoring of institutional units, classification of financial assets and liabilities, recording and valuation rules of financial and nonfinancial assets and liabilities, as well as transactions and other flows, and data aggregation and consolidation. The few exceptions include the recording of provisions, the valuation of equity liabilities, and the coverage of deposit-taking corporations except the central bank.

A1.97 Because of its broader scope, the *SNA* contains principles and concepts not necessarily relevant for the compilation of monetary statistics. Conversely, monetary statistics contain some accounting and regulatory concepts and additional classifications not found in the *SNA*. This stems from the close relationship of the FCs sectoral balance sheets with the accounting principles set by the International Financial Reporting Standards (IFRSs) or national accounting standards, as well as monetary statistics' focus on broad money and other financial aggregates.

Sectors and subsectors

A1.98 The *MFSMCG* generally uses the same institutional sector classification as the one used in the SNA sequence of economic accounts. MFS emphasise the financial stocks and flows between key sectors of the economy and between resident institutional sectors and non-residents, with a special focus on financial corporations.

A1.99 In MFS, the FCs sector is divided into three main subsectors: central bank, other depository corporations that combine (i) deposit-taking corporations except the central bank and (ii) money market funds, and other financial corporations that combine the remaining subsectors of financial corporations. Offshore banks that do not issue liabilities included in broad money (i.e., those only taking deposits from non-

residents) are classified with other financial corporations in MFS, whereas these are classified as deposit-taking corporations in the SNA sequence of economic accounts.

A1.100 For monetary policy purposes, the focus is on the consolidated data for the central bank and other depository corporations, which are referred to as the depository corporations subsector, presenting their claims on other sectors of the economy and on non-residents, which constitute the counterpart sources of broad money. For broader macro-economic analysis, there is also a focus on the consolidated data for the entire financial corporations sector, which provides the broadest coverage of the domestic credit supplied by the financial corporations.

A1.101 In MFS, the counterpart sectors households and NPISH are combined into one category. General government as a counterpart is split into central government and state government and local government, with social security funds presented at the level of government at which they operate. The counterpart non-financial corporations are split between public and other.

Classification and breakdowns of financial instruments

A1.102 While the *MFSMCG* defines assets and liabilities similarly to the SNA sequence of economic accounts for the most part; the MFS provides some additional details, reflecting the different objectives and uses of the two datasets. Some important differences include:

- The *MFSMCG* presents currency and deposits in more detail than the SNA, to support the compilation of the relevant aggregates for monetary policy purposes.
- The *MFSMCG* requires a breakdown of all assets and liabilities (excluding equity) by currency of denomination into domestic and foreign. The SNA does not explicitly require this breakdown.
- In the *MFSMCG* interbank (inter-depository corporations) positions are identified fully by all relevant instrument categories (except for equity). When there is uncertainty between a loan and a deposit, it is recorded under other deposits. In the SNA interbank positions are generally not shown as a separate category.
- In the *MFSMCG*, equity liabilities are split into five components: funds contributed by owners, retained earnings, current year results, general and special reserves, and valuation adjustments. In the SNA, the equity liability of financial corporations is reported as a single item, valued at the exchange value prevailing on the balance sheet date or an approximation of this value for unlisted equity. In the *MFSMCG*, equity liabilities are valued at book value and, consequently, net worth as defined by the SNA is equal to zero.

Provisions

A1.103 In the *MFSMCG*, provisions for losses on financial assets are treated as if these are liabilities and are classified under other accounts payable. In this regard, the underlying assets are recorded at their original value and are not adjusted for such provisions. There is a reduction in equity liability whenever provisions are made, because these provisions are recorded as expenses in the income statement as reflected in current year results within equity liabilities. Provisions are a precursor of a possible loan (or other financial asset) write-off and, similar to loan write-offs, are recorded as other change in the volume of assets.

A1.104 Provisions for losses on financial assets are generally not included in the SNA sequence of economic accounts. The SNA treatment has the advantage of reconciling debtor and creditor balances/transactions across the sectors of the economy. However, the SNA does recommend compiling supplementary items on provisions; see chapter 14 on Balance sheet.

Valuation

A1.105 The valuation principles used for MFS align with those in the integrated framework of the SNA with one exception. Consistent with the SNA, the *MFSMCG* recommends that valuations of stocks and flows should be based on observed market prices or market-price equivalents. It recognizes that market price quotations are not available for financial assets not traded or infrequently traded. It is, therefore, necessary to estimate market-equivalent values (fair values) for such financial assets.

A1.106 Deposits and loans in the MFS, as well as in the SNA sequence of economic accounts, are valued at nominal value – that is, the outstanding amount the debtor owes to the creditor, which comprises the outstanding amount including accrued but not yet paid interest. The same valuation principle applies to trade credit and advances.

A1.107 The *MFSMCG* recommends that equity and investment fund shares/units on the asset side of the balance sheet, and investment fund shares/units on the liability side of the balance sheet, be valued at market prices. In contrast, equity on the liability side of the financial corporations' sectoral balance sheets is valued at book value – that is, the value recorded in a financial corporation's business accounts. This differs from the SNA sequence of economic accounts, which values equity liabilities at the observed market price or an approximation of the market value. However, this information can be reconciled with national accounts (as presented in *MFSMCG*, Figure 2.2). As a consequence of the book valuation of equity liability, the MFS records flows between equity liability components and assets, and between equity liability components and other liabilities. These are classified as transactions, revaluations, and other changes in the volume of assets depending on their nature (as described in *MFSMCG,* paragraph 5.168).

A1.108 Although the valuation of equity liability at book value is not the preferred approach in the SNA sequence of economic accounts, it is recommended for MFS to maintain the balance sheet identity of the data reported and to support analysis of the financial corporations' balance sheet. The *MFSMCG* recommends that data of equity liability at the exchange value prevailing on the balance sheet date (or an approximation of this value for unlisted equity) are compiled as memorandum items in the sectoral balance sheets.

Consolidation

A1.109 The SNA sequence of economic accounts follows the principle of non-consolidated accounts, such that balance sheet positions as well as transactions and other flows match corresponding entries across the institutional sectors and categories. The *MFSMCG* adheres to this general principle for the compilation of sectoral balance sheets.

A1.110 In addition, the *MFSMCG* requires consolidation at the FCs sector level and/or at the subsector level for purposes of compiling analytical presentations or surveys that generate key financial aggregates. Consolidation at different subsector (other depository corporations, depository corporations, other FCs) and the entire FCs sector level involves cancelling out claims on and liabilities to units in the same subsector, showing only the FCs subsector's claims on and liabilities to other resident sectors and non-residents. Unconsolidated data, however, are available in the form of sectoral balance sheets.

3. Sequence of accounts

A1.111 The *MFSMCG* is focused on financial activity and positions of financial corporations, and only presents a partial sequence of accounts restricted to financial accounts, balance sheets, revaluations and (other) volume changes. For each financial instrument, a set of entries is shown, that is: opening stock, transactions, valuation changes, other changes in volume, and closing stock. Where the SNA and MFS overlap, the sequence of accounts is identical. However, the quadruple entry accounting of the SNA sequence of economic accounts is not fully possible in monetary statistics, except in the case of pure financial transactions/positions that take place within the sectors covered by the monetary statistics.

E. The System of Environmental-Economic Accounting (SEEA)

1. Introduction

A1.112 The System of Environmental-Economic Accounting (SEEA) is a statistical framework that integrates economic and environmental data to provide a more comprehensive and integrated view of the interrelationships between the economy and the environment and the stocks and changes in stocks of environmental assets, as they bring benefits to humanity. It builds on the accounting concepts, structures, rules and principles of the System of National Accounts (SNA). The SEEA consists of the *SEEA Central Framework* (UN et al 2012), which was adopted as an international statistical standard by the UN

Statistical Commission in 2012, and the *SEEA Ecosystem Accounting* (UN et al. 2021), which was adopted as an international statistical standard (Chapters 1-7) in 2021.

A1.113 At the time of writing, the *SEEA Central Framework* is undergoing revision, with one of the aims to harmonize it with the 2025 SNA.

A1.114 The *SEEA Central Framework* is a multipurpose conceptual framework that describes: the flows of natural inputs from the environment to the economy; their use within the economy; the returns back to the environment in terms of emissions into air, solid waste and waste water; and the stocks and changes in stocks of environmental assets. The *SEEA Ecosystem Accounting* provides an integrated and comprehensive statistical framework for organizing biophysical data about ecosystems, including tracking changes in ecosystem extent and condition, measuring ecosystem services, valuing ecosystem services and assets and linking this information to measures of economic and other human activity. Overall, the SEEA aims to provide a rich description of natural capital and measure its contribution to the economy and society.

A1.115 A key role of the SEEA is to bring consistency and coherence to environmental measurement using a similar accounting approach to that which underlies the integrated framework of the SNA. Three of the aspects of accounting approaches in the SEEA are highlighted here. First, the SEEA develops accounts in both physical and monetary terms for both stocks and flows related to natural resources and ecosystems.

A1.116 Second, the SEEA applies and adapts the same accounting rules and treatments as in the integrated framework of the SNA with the intent of supporting the integration of environmental data with the standard economic data organized within the integrated framework of the SNA. This connection is present in the SEEA's articulation of production boundaries and asset boundaries, approaches to monetary valuation and the structure of accounts such as supply and use tables and asset accounts. Notwithstanding this, the SEEA provides for extensions of the production and asset boundaries to better serve the purposes of accounting for the environment.

A1.117 Third, the SEEA uses standard classifications and typologies to build connections across the different accounts, including the integrated framework of the SNA. These classifications and typologies cover industries, institutional sectors, products, natural inputs, residuals, environmental assets, environmental purposes, ecosystem types and ecosystem services.

2. The SEEA Central Framework

A1.118 The *SEEA Central Framework* organizes information on the stocks and flows of natural resources that are relevant to the analysis of environmental and economic issues.

A1.119 The design and structure of the *SEEA Central Framework* enables data from a wide range of sources to be integrated with economic data and allows for the development of aggregates, indicators and trends across a broad spectrum of environmental and economic issues. Examples include the assessment of trends in the use and availability of natural resources, the extent of emissions and discharges to the environment resulting from economic activity, and the amount of economic activity undertaken for environmental purposes.

A1.120 The *SEEA Central Framework* covers measurement in three main areas: (i) the physical flows of materials and energy within the economy and between the economy and the environment; (ii) the stocks of environmental assets and changes in these stocks; and (iii) economic activity and transactions related to the environment.

Physical flow accounts

A1.121 A fundamental component in the *SEEA Central Framework* is the recording of data about environmental flows. Environmental flows concern flows of resources such as water and energy from the environment to the economy as natural inputs, environmental flows within the economy such as solid waste to a controlled landfill, and flows from the economy to the environment in the form of residuals such as air emissions. The tracking of environmental flows supports direct connection to production and consumption data in the integrated framework of national accounts. More generally, recording environmental flows provides insight into the pressures and impacts on the environment arising from the activities of different industries and households and how these pressures and impacts are changing over

time. Accounting for these flows is also essential for building footprint indicators that reflect the quantity of carbon, energy, materials, water and emissions embedded in products being consumed domestically or traded internationally.

A1.122 Accounting for environmental flows is undertaken in physical terms for each resource using the supply and use table structure of the integrated framework of the SNA, with the environment being included as an additional column. The physical supply and use tables (PSUT) provide a rich information set linking the flows of each resource to industries. For example, the energy PSUT organizes data on flows of energy resources from different natural inputs (coal, oil, gas, biomass, solar, wind or hydro) to economic units, their transformation and use in the economy and their return flows to the environment.

Asset accounts

A1.123 The *SEEA Central Framework* describes the compilation of asset accounts in physical and monetary terms for a range of individual environmental assets. The *SEEA Central Framework* describes asset accounts for land and for both non-renewable and renewable resources including mineral and energy resources, soil resources, timber resources, aquatic resources (in particular, fish stocks) and water resources. The accounts for resources cover both non-produced natural resources and cultivated biological resources from the 2008 SNA. The purpose in developing these accounts is to organize data on the stocks and changes in stocks of each of the resources and hence support an understanding of whether the current patterns of extraction and harvest of resources is sustainable.

A1.124 The asset accounts described in the *SEEA Central Framework* follow the same general structure as asset accounts in the SNA sequence of economic accounts, commencing with an entry for the opening stock at the beginning of the accounting period, showing entries for additions to stock and reductions in stock, including changes due to normal growth and extraction and changes due to catastrophic events, and concluding with an entry for the closing stock at the end of the accounting period. For the asset accounts in monetary terms a revaluation entry is also included. The monetary valuation of stocks and changes in stocks in the *SEEA Central Framework* aligns with the one applied in the SNA sequence of economic accounts and the same valuation concept is applied.

A1.125 The physical asset accounts of the *SEEA Central Framework* expands the asset boundary of the SNA to include all natural resources and areas of land of an economic territory that may provide resources and space for use in economic activity. Thus, the scope in physical terms is not limited to those assets with economic value. The scope of the monetary asset accounts of the *SEEA Central Framework* is the same as the scope of natural resources in the integrated framework of the SNA, with exception of the radio spectra.

A1.126 For individual non-produced natural resources (i.e. excluding cultivated biological resources), depletion reflects the decline in the quantity of a resource that is not offset by regeneration of the stock recognizing that the degree of regeneration will be dependent on the extent and condition of the underlying stock of the resource. Depletion can be measured for each resource in physical terms and also in monetary terms by estimating prices for the value of the change in the stock. The measurement of depletion in physical terms generally focuses on measurement of extraction but in the case of renewable resources (e.g., timber) the growth in stock will also be relevant. The *SEEA Central Framework* and the integrated framework of the 2025 SNA use a similar approach for attributing the cost of depletion against the extractor of the resource.

Environmental activity accounts and related flows

A1.127 An important component of environmental-economic accounting is to make explicit the recording of environment-related transactions in monetary terms between economic units. Generally, these transactions concern activity undertaken to preserve and protect the environment or manage natural resources. These transactions include taxes and subsidies that reflect efforts by governments, on behalf of society, to respond to environmental challenges by influencing the behaviour of producers and consumers with respect to the environment.

A1.128 The environment-related transactions are implicitly recorded within the integrated framework of the SNA, but many cannot be easily identified owing to the structure of the accounts or the types of classifications that are used. The *SEEA Central Framework* describes approaches for recognizing environmental transactions and provides appropriate definitions and accounts for organizing information

on these transactions. The *SEEA Central Framework* includes a classification of environmental activities to structure information on environmental protection and resource management activities. This classification has recently been updated, and the *Classification of Environmental Purposes* was adopted by the UN Statistical Commission in 2024 to support ongoing measurement in this space.

A1.129 A strong motivation for undertaking this work is to identify an environmental component within the key aggregates from the integrated framework of the SNA. Furthermore, in combination with information on the changing pressures on the environment, information on these transactions may be used to help assess whether sufficient economic resources are being used to reduce pressures on the environment and maintain the capacity of the environment to deliver benefits and whether those resources are being used effectively.

A1.130 The *SEEA Central Framework* describes the range of transactions along with relevant definitions, accounting treatments and classifications. The types of transactions that are within scope are:

- Environmental taxes;
- Environmental subsidies and similar transfers;
- Transactions related to environmental protection and resource management;
- Transactions related to the environmental goods and services sector;
- Transactions related to the use of natural resources including permits, licences and rents.

A1.131 To support a structured approach to recording transactions for environmental purposes, the *SEEA Central Framework* describes environmental protection expenditure accounts, which provide a series of tables for recording the supply of environmental protection specific services, the national expenditure on environmental protection and the financing of that expenditure. The *SEEA Central Framework* also describes a table for the presentation of data on the environmental goods and services sector, covering the output of environmental goods and services and associated measures of intermediate consumption, gross value added, remuneration of employees, gross fixed capital formation, exports and employment.

3. The SEEA Ecosystem Accounting

A1.132 The *SEEA Ecosystem Accounting* is an integrated and comprehensive statistical framework for organizing data about the extent and quality of ecosystems, ecosystem services, and changes in ecosystem assets, and linking this information to economic and other human activity. Compilation of these accounts commonly uses spatially explicit data and information about ecosystem assets and the ecosystem services they produce. To facilitate the integration of various ecological data and support comparability across countries and regions, the *SEEA Ecosystem Accounting* provides a range of key concepts and definitions. Two key definitions concern ecosystem assets and ecosystem services:

- Ecosystem assets are contiguous spaces of a specific ecosystem type characterized by a distinct set of biotic and abiotic components and their interactions.
- Ecosystem services are the contributions of ecosystems to the benefits that are used in economic and other human activity.

A1.133 The *SEEA Ecosystem Accounting* uses the following three broad categories of ecosystem services:

- *Provisioning services*, which are ecosystem services representing the contributions to benefits that are extracted or harvested from ecosystems.
- *Regulating and maintenance services*, which are ecosystem services resulting from the ability of ecosystems to regulate biological processes and to influence climate, hydrological and biochemical cycles, and thereby maintain environmental conditions beneficial to individuals and society.
- *Cultural services,* which are the experiential and intangible services related to the perceived or actual qualities of ecosystems whose existence and functioning contributes to a range of cultural benefits.

A1.134 The *SEEA Ecosystem Accounting* is built on five core accounts:

- *Ecosystem extent accounts* which record the total area of each ecosystem, classified by type within a specified area (ecosystem accounting area). Ecosystem extent is measured over time in ecosystem accounting areas (e.g., nation, province, river basin, protected area, etc.) by ecosystem type, thus

illustrating the changes in extent from one ecosystem type to another over the accounting period. The reference ecosystem classification used in the *SEEA Ecosystem Accounting* is the IUCN Global Ecosystem Typology.

- *Ecosystem condition accounts* which record the condition of ecosystem assets in terms of selected characteristics at a specific point in time. Over time, they show the changes in condition and provide valuable information on the health of ecosystems. The *SEEA Ecosystem Accounting* describes a three stage approach for the compilation of condition accounts and provides an Ecosystem Condition Typology with six classes to support the identification and selection of ecosystem characteristics.
- *Ecosystem services flow accounts* (including both physical and monetary accounts) which record, using a supply and use table structure, the supply of ecosystem services by ecosystem assets and the use of those services by economic units, including households.
- *Monetary ecosystem asset accounts* which record information on stocks and changes in stocks (additions and reductions) of ecosystem assets in monetary terms. The monetary value of an ecosystem asset is measured as the net present value of the future flows of ecosystem services from that asset. The asset account includes entries for ecosystem degradation and enhancement.

A1.135 The *SEEA Ecosystem Accounting* also describes "thematic accounting", which organizes data around specific policy-relevant environmental themes, such as biodiversity, climate change, oceans and urban areas. Other important thematic accounts that may be compiled include accounts for protected areas, wetlands and forests.

A1.136 An important aspect of ecosystem accounting is that it allows the contributions of ecosystems to society to be expressed in monetary terms, as a consequence of which those contributions to society's well-being can be more easily compared to goods and services as recorded in the integrated framework of the SNA. Monetary estimates can provide information for decision-makers, for example for economic policy planning, cost-benefit analysis, and for raising awareness of the relative importance of nature to society. Ecosystem service values are derived by using a range of economic valuation techniques.

SEEA Ecosystem Accounting and the integrated framework of the SNA

A1.137 Ecosystem services are natural processes which are, by definition, outside of the production boundary of the integrated framework of the SNA since they do not reflect the combination of labour and capital used by economic units in the production of goods and services. Further, the integrated framework of the SNA only records flows between economic units and hence, for example, the flow of crops is not recorded as a flow between agricultural land and a farmer, but as a flow between a farmer and others in the food supply chain. Ecosystem services in this example reflect a flow between agricultural land and a farmer that is embodied in the subsequent supply chain, but the flow from the land to the farmer is not explicitly recorded in the integrated framework of the SNA. Ecosystem services, in many but not all cases, contribute to the production of goods and services inside the production boundary of the integrated framework (SNA benefits). However, as just described, this does not imply that the ecosystem services themselves are inside the production boundary. Ecosystem services also contribute to the supply of benefits that are outside the production boundary of the integrated framework (non-SNA benefits) such as by providing air filtration services that lead to, for example, health benefits.

A1.138 The monetary value of ecosystem assets in *SEEA Ecosystem Accounting* reflects the combined value of all future ecosystem services whether they contribute to SNA benefits or non-SNA benefits. Some ecosystem assets will, in physical terms, relate to the same spatial area as land areas that are considered economic assets. For this reason, there will be an overlap between the value of ecosystem assets recorded following the *SEEA Ecosystem Accounting* and economic assets recorded in the integrated framework of the SNA (i.e., land) to the extent that the land provides ecosystem services that are inputs to the production of SNA benefits (e.g., crops). However, ecosystem assets will have a monetary value recorded following the *SEEA Ecosystem Accounting* that is not reflected in the integrated framework of the SNA in cases where (i) the ecosystem assets contribute to benefits that are outside the scope of the production boundary of the integrated framework of the SNA; or (ii) the ecosystem assets in physical terms relate to spatial areas that are not considered as economic assets in the integrated framework of the SNA (e.g., national parks). At the same time, some characteristics of the value of land will not be reflected in the value of ecosystem assets, since some characteristics of value, for example the value of residential land which commonly is driven by its location, do not reflect flows of ecosystem services.

Annex 2: The classification hierarchies of the SNA and associated codes

A. Introduction

A2.1 As explained in chapter 3, the accounting framework of the SNA is built around a small number of conceptual elements, in particular sectors, transactions and classifications of the items subject to transactions and other flows, especially assets and liabilities. For each of these elements, a hierarchical classification exists. Accounts can be compiled at greater or lesser degrees of detail by using higher or lower levels of these hierarchies. In some cases, a full specification requires information about two or even three hierarchies. For example, entries in the accounts typically refer to a sector and a transaction, other flow or stock and may specify what type of product or asset is the subject of the entry.

A2.2 As well as the classification hierarchies of the conceptual elements particular to the SNA, use is also made of other classification systems, including those describing the industrial classification used for production activities and classifications of goods and services, some of which describe the nature of the items and others that describe the purpose they are intended to serve.

A2.3 Summary accounts are regularly collected by international agencies and to facilitate this, a set of standardized codes is used to identify the items, usually in time series form, that are the subject of data transmission.

A2.4 The purpose of this annex is to provide more information on each of these aspects. Section B lists in full detail the various classification hierarchies of the system. International data collection does not cover all the detail shown but where collection is common and codes are developed, these are shown alongside the entries in the classification.

A2.5 The main international classification systems external to the SNA that are frequently used and referred to are the following:

COFOG

Publication reference: United Nations. Forthcoming. Classification of the functions of government (COFOG). Department of Economic and Social Affairs, Statistics Division, Statistical papers, Series M, No xx. United Nations, New York

Web reference: http://unstats.un.org/unsd/class/default.asp,

COICOP

Publication reference: United Nations. 2018. Classification of individual consumption according to purpose (COICOP) 2018. Department of Economic and Social Affairs, Statistics Division, Statistical papers, Series M, No 99. United Nations, New York.

Web reference: http://unstats.un.org/unsd/class/default.asp,

COPNI

Publication reference: United Nations. 2000. Classification of expenditure according to purpose: Classification of the functions of government (COFOG), Classification of individual consumption according to purpose (COICOP), Classification of the purposes of non-profit institutions serving households (COPNI), Classification of the outlays of producers according to purpose (COPP). Department of Economic and Social Affairs, Statistics Division, Statistical papers, Series M, No 84. United Nations, New York.

Web reference: **http://unstats.un.org/unsd/class/default.asp**

ISIC

Publication reference: United Nations. 2025. International Standard Industrial Classification of all Economic Activities (*ISIC*) Revision 5. Department of Economic and Social Affairs, Statistics Division, Statistical papers, Series M, No 4, Rev. 5 United Nations, New York.

Web reference: **http://unstats.un.org/unsd/class/default.asp**

CPC

Publication reference: United Nations. 2025. Central Product Classification (CPC) Version 3. Department of Economic and Social Affairs, Statistics Division, Statistical papers, Series M, No 77, Ver. 3. United Nations, New York.

Web reference: **http://unstats.un.org/unsd/class/default.asp**

SITC

Publication reference: United Nations. 2006. Standard Industrial Trade Classification Revision. Department of Economic and Social Affairs, Statistics Division, Statistical papers, Series M, No 34, Rev 4. United Nations, New York.

Web reference: **http://unstats.un.org/unsd/trade/default.htm**

HS

Publication reference: World Customs Organization. 2022. Harmonized Commodity Description and Coding System, 2022 edition.

Web reference: https://www.wcoomd.org/en/topics/nomenclature/instrument-and-tools/hs-nomenclature-2022-edition/hs-nomenclature-2022-edition.aspx

B. The classification hierarchies of the SNA

A2.6 Four sets of hierarchies are described. The first of these relates to the classification of institutional sectors. The second covers the classification of flows and balancing items; the third covers the classification of stocks of assets and liabilities. The last set relates to other items. Each set is described in turn in the following sections. At various places, supplementary or of which items, as well as items that go beyond the conceptual boundaries of the integrated framework of national accounts are listed. A general convention is that supplementary items are identified with a suffix "S", of which items with a suffix "ow" and items that go beyond the conceptual boundaries of the integrated framework with a suffix "X".

1. Sectors (S codes)

A2.7 The sectoring principles of the SNA are described in chapter 5. The following list brings all the aspects of the potential types of disaggregation together in a comprehensive list. The list is extensive and it is unlikely that all aspects will be covered by any country in all periods as a matter of course. Some of the possible breakdowns may not contain any institutional units and others may contain so few that publication at this degree of detail is not possible. Nevertheless, the full list is shown for the sake of completeness.

A2.8 An important breakdown, which is considered a standard part of the integrated framework, is the breakdown of corporations by control: public corporations, national private corporations and foreign-controlled corporations. In addition, for public corporations and for national private corporations, an of which item is recommended for those corporations which are part of a domestic multinational enterprise (MNE) group.

A2.9 Another highly relevant breakdown, also part of the integrated framework, concerns the breakdown of financial corporations according to the nature of the financial activity being undertaken.

A2.10 A special group of units are those known as non-profit institutions, designated as NPIs. Within the corporations sectors, units that are not NPIs are referred to as for-profit institutions, or FPIs. It is worth reiterating that an NPI is not prohibited from making a profit, it is simply prohibited from distributing any profit it makes to its owners..

A2.11 Not all NPIs are market producers. Those that are not are divided between those controlled by government, where they are still referred to as NPIs, and those not controlled by government. All of these serve households and form a separate sector of their own. They are known as non-profit institutions serving households, or NPISHs.

A2.12 General government social security is organized differently in different countries. In some cases, social security is organized by one unit for all levels of government, while in other cases each level of government includes its own social security. When social security is organized by one unit for all levels of government, total general government consists of four subsectors, one for each level of government and one for the social security unit. When each level of government includes its own social security provision, then there are only three subsectors, one for each level of government including social security.

A2.13 Supplementary classifications are shown in the for NPIs and FPIs, as well as for subsectors of general government in which social security is grouped together with the different layers of government.

A2.14 The full list of institutional sectors and subsectors is shown below.

S1	Total economy
S11	Non-financial corporations
	Classification based on control
S1111	Public non-financial corporations
S1111ow	Part of a domestic multinational enterprise (MNE) group
S1112	National private non-financial corporations
S1112ow	Part of a domestic multinational enterprise (MNE) group
S1113	Foreign-controlled non-financial corporations
S1113ow	Special Purpose Entities
	Supplementary classification based on profit versus non-profit
S11S1	For profit non-financial corporations
S11S2	Non-profit non-financial corporations
S12	Financial corporations
	Classification based on control
S1211	Public financial corporations
S1211ow	Part of a domestic multinational enterprise (MNE) group
S1212	National private financial corporations
S1212ow	Part of a domestic multinational enterprise (MNE) group
S1213	Foreign-controlled financial corporations
S1213ow	Special Purpose Entities
	Classification based on type of financial services
S1221	Central bank
S1222	Deposit-taking corporations, except the central bank
S1223	Money market funds
	Supplementary classification in view of non-bank financial intermediation
S1223S1	Constant net asset value funds
S1223S2	Variable net asset value funds
S1224	Non-MMF investment funds
	Supplementary classification in view of non-bank financial intermediation
S1224S1	Open-ended funds
S1224S11	Real estate funds
S1224S12	Equity funds
S1224S13	Bond funds
S1224S14	Mixed or balanced funds
S1224S15	Hedge funds
S1224S19	Other open-ended funds
S1224S2	Closed-ended funds
S1224S21	Real estate funds
S1224S22	Equity funds
S1224S23	Bond funds
S1224S24	Mixed or balanced funds

S1224S25	Hedge funds
S1224S29	Other closed-ended funds
S1225	Other financial intermediaries, except insurance corporations and pension funds
	Supplementary classification in view of non-bank financial intermediation
S1225S1	Financial corporations engaged in the securitisation of assets
S1225S2	Financial corporations engaged in lending and leasing
S1225S3	Underwriters, security and derivative dealers
S1225S4	Specialised financial corporations
S1225S5	Central clearing counterparties
S1226	Financial auxiliaries
S1227	Captive financial institutions and money lenders
	Supplementary classification in view of non-bank financial intermediation
S1227S1	Trusts, estate and agency accounts (ETAs)
S1227S2	Corporate groups' captive financial entities
S1227S2ow	Special Purpose Entities (SPEs)
S1227S3	Other captive finance companies and moneylenders
S1228	Insurance corporations
	Supplementary classification in view of non-bank financial intermediation
S12281	Non-life insurance corporations
S12282	Life insurance corporations
S1229	Pension funds
	Supplementary classification in view of non-bank financial intermediation
S1229S1	Defined benefit pension funds
S1229S2	Defined contribution pension funds
	Supplementary classification based on profit versus non-profit
S12S1	For profit financial corporations
S12S2	Non-profit financial corporations
S13	General government
	Classification with separate identification of social security funds
S1311	Central government
S1312	State government
S1313	Local government
S1314	Social security funds
	Alternative classification without separate identification of social security funds
S1321	Central government including social security funds
S1322	State government including social security funds
S1323	Local government including social security funds
S14	Households
S141	Private households
S14101	Private households with income in the first decile
S14102	Private households with income in the second decile
S14103	Private households with income in the third decile
S14104	Private households with income in the fourth decile
S14105	Private households with income in the fifth decile
S14105	Private households with income in the sixth decile
S14107	Private households with income in the seventh decile
S14108	Private households with income in the eight decile
S14109	Private households with income in the nineth decile
S14110	Private households with income in the tenth decile
S142	Institutional households

S15	Non-profit institutions serving households (NPISHs)
	Supplementary classification based on control
S15S1	National private NPISHs
S15S2	Foreign-controlled NPISHs
S2	Rest of the world

2. Classifications of flows and balancing items

A2.15 The classifications relate to:

a. Transactions in products;

b. Distributive transactions;

c. Transactions in non-financial assets (for capital account);

d. Transactions in financial assets;

e. Other flows; and

f. Balancing and net worth items.

Transactions in products (P codes)

A2.16 Product codes are used to describe the supply and use of goods and services produced within the integrated framework of national accounts. Apart from depreciation and depletion, including the items adjusted for these decreases in stocks, all the items listed appear in the goods and services account. In addition, output and intermediate consumption appear in the production account, final and actual consumption expenditure appear in the use of income accounts and capital formation appears in the capital account.

A2.17 All entries in the classification can be further elaborated by applying a second classification to that shown here. For capital formation the non-financial asset classification (codes AN) could be used within the accumulation accounts. For output, intermediate consumption and final consumption product codes such as the those in the CPC could be used. For final consumption, functional codes could be used, COFOG for government consumption, COICOP for households, and COPNI for NPISHs. For imports and exports, either SITC or HS codes could be used.

A2.18 Several items may be shown either gross or net of depreciation and depletion. Gross entries are shown with a trailing g, net entries by a trailing n. The qualifier d is used for depreciation, the difference between gross and net fixed capital measures. Some of the balancing items may be shown either gross or net of depreciation and depletion.

	Transactions in products
P1	Output
P11	Market output
P12	Output for own final use
P13	Non-market output
P2	Intermediate consumption
P3	Final consumption expenditure
P3ow	Final consumption expenditure on consumer durables
P31	Individual consumption expenditure
P32	Collective consumption expenditure
P4	Actual final consumption
P41	Actual individual consumption
P42	Actual collective consumption
P5	Capital formation
P51g	Gross fixed capital formation

	Transactions in products
P511g	Gross fixed capital formation in produced non-financial assets (excluding natural resources)
P512g	Gross fixed capital formation in natural resources
P51d	Depreciation (-)
P51d1	Depreciation on gross operating surplus
P51d2	Depreciation on gross mixed income
P511d	Depreciation of produced non-financial assets (excluding natural resources) (-)
P512d	Depreciation of produced natural resources (-)
P51n	Net fixed capital formation
P511n	Net fixed capital formation in produced non-financial assets (excluding natural resources)
P512n	Net fixed capital formation in natural resources
P52	Changes in inventories
P521	Changes in inventories (excluding natural resources)
P522	Changes in inventories of natural resources
P53	Acquisitions less disposals of valuables
P6	Exports of goods and services
P61	Exports of goods
P62	Exports of services
P7	Imports of goods and services
P71	Imports of goods
P72	Imports of services
P8	Depletion
P81	Depletion on gross operating surplus
P82	Depletion on gross mixed income

Distributive transactions (D codes)

A2.19 Distributive transaction codes appear in all the sequence of economic accounts from the generation of earned income account up to and including the capital account. As their name implies, they show the impact of distribution and redistribution of income (and saving in the case of capital transfers). For all distributive transactions, the receivable entries for all sectors including the rest of the world must balance the payable entries.

A2.20 Four groups of transactions appear in the generation of earned income account and the allocation of earned income account. These are remuneration of employees, taxes on production and imports, subsidies and property income. Depletion borne by the legal owner is shown as a separate, usually negative, item under rent.

A2.21 Four groups of transactions appear in the income transfers other than transfers in kind account. These are current taxes on income, wealth, etc., social contributions less service charges, social benefits and other current transfers. Together they represent all current transfers in the sequence of economic accounts except social transfers in kind.

A2.22 Employers' contributions appear in both the generation of earned income account and allocation of earned income account as payable by employers and receivable by employees. In the income transfers other than transfers in kind account, these amounts are payable by households and receivable by those administering social insurance schemes. In order to show exactly the same value in each case, the deduction of the charge that represents part of the output of the schemes and final consumption expenditure of the beneficiary households is also shown in the income transfers other than transfers in kind account as a separate item. The item social insurance scheme service charges is thus an adjustment item only and not a distributive transaction in itself.

A2.23 Transactions concerning social transfers in kind appear in the social transfers in kind account, while the adjustment for the change in pension and non-pension entitlements appears in the use of income account and the use of disposable income adjusted for social transfers in kind account.

A2.24 Capital transfers appear in the capital account. By convention, as explained in chapter 11, all capital transfers are shown on the right-hand side of the account, with the payables having a negative sign. The codes for capital transfers, therefore, have either r for receivable or p for payable appended to the basic code.

	Distributive transactions
D1	Remuneration of employees
D11	Wages and salaries
D12	Employers' social contributions
D121	Employers' actual social contributions
D1211	Employers' actual pension contributions
D1212	Employers' actual non-pension contributions
D122	Employers' imputed social contributions
D1221	Employers' imputed pension contributions
D1222	Employers' imputed non-pension contributions
D2	Taxes on production and imports
D2ow	Environmental taxes on production and imports
D21	Taxes on products
D211	Value added type taxes (VAT)
D212	Taxes and duties on imports excluding VAT
D2121	Import duties
D2122	Taxes on imports excluding VAT and import duties
D213	Export taxes
D214	Taxes on products excluding VAT, import and export taxes
D29	Other taxes on production
D3	Subsidies
D3ow	Environmental subsidies
D31	Subsidies on products
D311	Import subsidies
D312	Export subsidies
D313	Other subsidies on products
D39	Other subsidies on production
D4	Property income
D41	Investment income
D411	Interest and similar returns
D412	Income on equity
D4121	Dividends
D4121ow	Dividends from accumulated reserves to foreign direct investors
D4122	Withdrawals from income of quasi-corporations
D4123	Reinvested earnings on foreign direct investment
	Supplementary information
D4124X	Reinvested earnings on equity investment not related to FDI
D413	Investment income disbursements
D4131	Investment income attributable to insurance policyholders
D4132	Investment income payable on pension and non-pension entitlements
D4133	Investment income attributable to the surplus/shortfall in defined benefit pension funds
D4134	Investment income attributable to investment fund share holders
D42	Rent
D42dep	Depletion borne by the legal owner
D5	Current taxes on income, wealth, etc.
D51	Taxes on income
D59	Other current taxes
D61	Social contributions less service charges

	Distributive transactions
D611 (= D121)	Employers' actual social contributions
D6111 (= D1211)	Employers' actual pension contributions
D6112 (= D1212)	Employers' actual non-pension contributions
D612 (= D122)	Employers' imputed social contributions
D6121 (= D1221)	Employers' imputed pension contributions
D6122 (= D1222)	Employers' imputed non-pension contributions
D613	Households' actual social contributions
D6131	Households' actual pension contributions
D6132	Households' actual non-pension contributions
D614	Households' social contribution supplements
D6141	Households' pension contribution supplements
D6142	Households' non-pension contribution supplements
D615	Social insurance scheme service charges (-)
D62	Social benefits other than social transfers in kind
D621	Social security benefits in cash
D6211	Social security pension benefits
D6212	Social security non-pension benefits in cash
D622	Other social insurance benefits
D6221	Other social insurance pension benefits
D6222	Other social insurance non-pension benefits
D623	Social assistance benefits in cash
D63	Social transfers in kind
D631	Social transfers in kind – non-market production
D632	Social transfers in kind – purchased market production
D7	Other current transfers
D71	Non-life insurance premiums less service charges
D711	Non-life direct insurance premiums less service charges
D712	Non-life reinsurance premiums less service charges
D72	Non-life insurance claims
D721	Non-life direct insurance claims
D722	Non-life reinsurance claims
D73	Current transfers within general government
D74	Current international cooperation
D75	Miscellaneous current transfers
D751	Current transfers to NPISHs
D752	Current transfers between resident and non-resident households
D759	Other miscellaneous current transfers
D8	Adjustment for the change in pension and non-pension entitlements
D9r	Capital transfers, receivable
D91r	Capital taxes, receivable
D92r	Investment grants, receivable
D93r	Debt forgiveness, receivable
D99r	Other capital transfers, receivable
D9p	Capital transfers, payable
D91p	Capital taxes, payable
D92p	Investment grants, payable
D93p	Debt forgiveness, payable
D99p	Other capital transfers, payable

Transactions in non-financial assets (NF codes))

A2.25 The prefix of the codes used for transactions in non-financial assets is different from the one used for stocks, stocks have a prefix AN and transactions NF.

	Transactions in non-financial assets (for capital account)
NF1	Acquisitions less disposals of produced non-financial assets (excluding natural resources)
NF11 (= P511g)	Gross fixed capital formation
NF12 (= P511d)	Depreciation (-)
NF13 (= P521)	Changes in inventories
NF14 (= P53)	Acquisitions less disposals of valuables
NF2	Acquisitions less disposals of non-produced non-financial assets (excluding natural resources)
NF21	Acquisitions less disposals of contracts, leases and licenses
NF22	Acquisitions less disposals of crypto assets without a counterpart liability designed to act as a medium of exchange
NF23	Acquisitions less disposals of purchased goodwill and marketing assets
NF3	Acquisitions less disposals of natural resources
NF31 (= P512g)	Gross fixed capital formation
NF32 (= P512d)	Depreciation (-)
NF33 (= P522)	Changes in inventories
NF34	Acquisitions less disposals of non-produced natural resources
NF35 (= P8)	Depletion (-)

Transactions in financial assets and liabilities (F codes))

A2.26 The prefix for transactions in financial assets and liabilities is different from the one used for stocks. The hierarchical element comes from itemizing the assets and liabilities concerned. There is a perfect match between the codes used for stock levels (positions) of financial assets and liabilities and the flows in them, except that the stocks have prefix AF and the transactions F.

A2.27 The full list of codes for transactions in financial assets and liabilities is shown below.

	Transactions in financial assets
F1	Monetary gold and SDRs
F11	Monetary gold
F12	SDRs
F2	Currency and deposits
F21	Currency
F22	Crypto-assets with a corresponding liability designed to act as a general medium of exchange
F23	Transferable deposits
F29	Other deposits
F3	Debt securities
F31	Short-term debt securities
F32	Long-term debt securities
F33	Crypto assets with a corresponding liability designed to act as a medium of exchange within a platform, short-term
F34	Crypto asset with a corresponding liability designed to act as a medium of exchange within a platform, long-term
F35	Utility tokens
F4	Loans
F41	Short-term loans
F42	Long-term loans
F5	Equity and investment shares/units

F51	Equity
F511	Listed shares
F512	Unlisted shares
F519	Other equity and equity in international organizations
F52	Investment fund shares/units
F521	Money market fund shares/units
F522	Non-MMF investment fund shares/units
F6	Insurance, pension and standardized guarantee schemes
F61	Non-life insurance technical reserves
F62	Life insurance and annuity entitlements
F63	Pension entitlements
F64	Claims of pension funds on pension sponsors
F65	Entitlements to non-pension benefits
F66	Provisions for calls under standardized guarantees
F7	Financial derivatives and employee stock options
F71	Financial derivatives
F711	Foreign currency derivatives
F712	Single currency interest rate derivatives
F713	Equity derivatives
F713	Commodity derivatives
F715	Credit derivatives
F719	Other derivatives
F72	Employee stock options
F8	Other accounts receivable/payable
F81	Trade credit and advances
F82	Emission permits
F89	Other accounts receivable/payable n.e.c.

Other changes of assets and liabilities (K codes)

A2.28 Codes K1 to K6 relate to other flows in the changes in the volume of assets account. K7 codes show the holding gains and losses appearing in the revaluation account.

	Other flows
K1	Economic appearance of assets
K2	Economic disappearance of assets
K3	Catastrophic losses
K4	Uncompensated seizures
K5	Other changes in volume n.e.c.
K6	Changes in classification
K61	Changes in sector classification and structure
K62	Changes in classification of assets and liabilities
K7	Nominal holding gains and losses
K71	Neutral holding gains and losses
K72	Real holding gains and losses

Balancing and net worth items (B codes)

A2.29 The balancing items of the current accounts appear with codes B1 to B8. Each of these may be shown gross or net of depreciation and depletion. To indicate which is the case, g or n is appended to the end of the code.

A2.30 The B10 codes all relate to changes in net worth. Like balancing items, these are accounting constructs derived by deducting entries on one side of the account from the entries on the other. However, while balancing items show the excess of right-hand side entries over those on the left-hand side, net worth items show the excess of entries on the left-hand side of the account over those on the right-hand side.

A2.31 Code B11, external balance of goods and services, is an item from the rest of the world account. It has no direct counterpart in the total economy sectors but added to gross domestic expenditure for the total economy gives gross domestic product. Code B12, current external balance, is also from the rest of the world account and is analogous to saving for a domestic sector when the external balance of goods and services is taken in place of value added.

A2.32 Code B90, unlike all the other codes in this section, relates to stocks and not flows. It shows the value of net worth calculated as the excess of assets over liabilities.

A2.33 The full list of balancing and net worth items is shown below.

	Balancing and net worth items
B1g	Value added, gross / Gross domestic product
B1n	Value added, net / Net domestic product
B2g	Operating surplus, gross
B2n	Operating surplus, net
B3g	Mixed income, gross
B3n	Mixed income, net
B4g	Entrepreneurial income, gross
B4n	Entrepreneurial income, net
B5g	Balance of earned incomes, gross / Gross national income
B5n	Balance of earned incomes, net / Net national income
B6g	Disposable income, gross
B6n	Disposable income, net
B7g	Disposable income adjusted for social transfers in kind, gross
B8n	Disposable income adjusted for social transfers in kind, net
B8g	Saving, gross
B8n	Saving, net
B9	Net lending (+) / Net borrowing (-)
B10	Changes in net worth
B101	Changes in net worth due to saving and capital transfers
B102	Changes in net worth due to other changes in the volume of assets and liabilities
B103	Changes in net worth due to nominal holding gains and losses
B1031	Changes in net worth due to neutral holding gains and losses
B1032	Changes in net worth due to real holding gains and losses
B11	External balance of international trade in goods and services
B12	Current external balance
B90	Net worth

3. Classification of stocks of assets and liabilities

Balance sheet entries (L codes)

A2.34 For a single balance sheet, as for the financial account, the only codes necessary are those giving the details of assets by type, using AN and AF codes. However, an account can be drawn up showing the stock levels at the start (LS) and end (LE) of a period, and the total changes between them (LX). All three codes need to be qualified by asset types. The LX entries are the sum of the entries of NF, F and K codes for the assets in question for the period covered.

A2.35 From the entries in the opening balance sheet a value of net worth (B90) can be calculated. The difference between this and the value of B90 in the closing balance sheet must be equal to the balance of all the LX codes, which must also be equal to the value for B10.

Opening balance sheet (LS)

Changes in balance sheet (LX)

Closing balance sheet (LE)

Non-financial assets (AN codes)

A2.36 Non-financial assets are classified by the purpose for which the assets are acquired. All assets serve as a store of value but, with the exception of valuables that are solely a store of value, other non-financial assets are primarily acquired for use in production. The AN codes, given in full below, combine some elements of function with a descriptive code. A desk, for example, could be part of AN113, machinery and equipment, or almost any of the inventory codes or even as a valuable.

A2.37 The classification of non-financial assets is split between produced assets (excluding produced natural resources) (AN1), non-produced assets (excluding non-produced natural resources) (AN2) and natural resources (AN3). The three major subheadings for produced non-financial assets (excluding natural resources) are fixed assets (excluding produced natural resources) (AN11), inventories (excluding produced natural resources) (AN12) and valuables (AN13). The three major sub-headings for non-produced non-financial assets (excluding non-produced natural resources) are contracts, leases and licenses (AN21), crypto assets without a corresponding liability designed to act as a medium of exchange (AN22) and purchased goodwill and marketing assets (AN23). The five major subheadings for natural resources are land (AN31), mineral and energy resources (AN32), biological resources (AN33), water resources (AN34) and other natural resources (AN39),

A2.38 The entries for costs of ownership transfer on non-produced non-financial assets (excluding natural resources) (AN116) and costs of ownership transfer on non-produced natural resources are anomalous. These flows exist and are treated as part of fixed capital formation, that is as the acquisition of fixed assets. However, when stock levels are itemized, the value of these costs of ownership transfer is included with the non-produced assets (excluding natural resources) and non-produced natural resources to which they refer and so are not shown separately as part of AN11 or AN3. The items are included in the full list, shown below, for expository purposes only.

	Produced non-financial assets (excluding produced natural resources)
AN1	Produced non-financial assets (excluding produced natural resources)
AN11	Fixed assets (excluding produced natural resources)
AN111	Dwellings
AN112	Other buildings and structures
AN1121	Buildings other than dwellings
AN1122	Other structures
AN1122ow11	Renewable energy installations
AN1122ow12	Fossil fuel installations
AN1123	Land improvements
AN113	Machinery and equipment
AN1131	Transport equipment
AN1131ow1	Electric powered transport equipment
AN1132	ICT-equipment
AN1139	Other machinery and equipment
AN1139ow11	Carbon capturing equipment
AN1139ow12	Nuclear fusion equipment
AN114	Weapons systems
AN115	Intellectual property products
AN1151	Research and development
AN1152	Mineral exploration and evaluation
AN1153	Computer software, data and databases
AN11531	Computer software, including artificial intelligence systems
AN11531ow1	Artificial intelligence
AN11532	Data and databases

	Produced non-financial assets (excluding produced natural resources)
AN1154	Entertainment, literary or artistic originals
AN1159	Other intellectual property products
(AN116)	(Costs of ownership transfer on non-produced assets (excluding natural resources))
	Supplementary information
AN17X	Consumer durables
AN171X	Furniture and household appliances
AN1711X	Furniture and furnishings
AN1712X	Carpets and other floor coverings
AN1713X	Major household appliances whether electric or not
AN1714X	Major tools and equipment for house and garden
AN172X	Personal transport equipment
AN1721X	Motor cars
AN1722X	Motor cycles
AN1723X	Animal drawn vehicles
AN173X	Recreational and entertainment goods
AN1731X	Telephone and telefax equipment
AN1732X	Equipment for the reception, recording and reproduction of sound and pictures
AN1733X	Photographic and cinematographic equipment and optical instruments
AN1734X	Information processing equipment
AN1735X	Major durables for outdoor recreation
AN1736X	Musical instruments and major durables for indoor recreation
AN174X	Other durable goods
AN1741X	Jewellery, clocks and watches
AN1742X	Therapeutic medical appliances and equipment
AN12	Inventories (excluding produced natural resources)
AN121	Materials and supplies
AN122	Work-in-progress (excluding produced natural resources)
AN123	Finished goods
AN124	Military inventories
AN125	Goods for resale
AN13	Valuables
AN131	Precious metals and stones
AN132	Antiques and other art objects
AN139	Other valuables

	Non-produced non-financial assets (excluding non-produced natural resources)
AN2	Non-produced non-financial assets (excluding non-produced natural resources)
AN21	Contracts, leases and licenses
AN211	Marketable operating leases
AN212	Permits to undertake specific activities
AN213	Entitlements to future goods and services on an exclusive basis
AN214	Non-fungible tokens

AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange
AN23	Purchased goodwill and marketing assets

	Natural resources
AN3	Natural resources
AN31	Land
AN32	Mineral and energy resources
AN321	Non-renewable mineral and energy resources
	Supplementary classification based on type of resources
AN321S1	Coal and lignite resources
AN321S2	Oil and natural gas resources
AN321S21	Oil resources
AN321S22	Natural gas resources
AN321S3	Mineral resources
AN321S9	Other non-renewable mineral and energy resources
AN322	Renewable energy resources
	Supplementary classification based on type of resources
AN3221	Wind energy resources
AN3222	Solar energy resources
AN3223	Water energy resources
AN3224	Geothermal energy resources
AN3229	Other renewable energy resources
AN33	Biological resources
AN331	Biological resources yielding repeat products
AN3311	Animal resources yielding repeat products
AN3312	Tree, crop and plant resources yielding repeat products
AN332	Biological resources yielding once-only products
AN3321	Cultivated biological resources yielding once-only products
AN3322	Non-cultivated biological resources yielding once-only products
AN333	Work-in-progress on cultivated biological resources
AN3331	Work-in-progress on cultivated biological resources yielding repeat products
AN3332	Work-in-progress on cultivated biological resources yielding once-only products
AN34	Water resources
AN39	Other natural resources
AN391	Radio spectra
AN392	Permits to use natural resources
AN393	Other
(AN35)	(Costs of ownership transfer on non-produced natural resources)
	Supplementary information
AN4X	Ecosystem assets
AN5X = AN3 + AN4X	Natural capital
AN6X	Human capital

	Natural resources
AN7X	Social capital

Financial assets (AF codes)

A2.39 As explained in the paragraph A2.26, on transactions in financial assets and liabilities, there is a one-to-one match between those F codes and the stock levels or positions (AF codes). In practice, though, balance sheet data may be more detailed. The full list of financial assets with AF codes is shown below.

AF1	Monetary gold and SDRs
AF11	Monetary gold
AF12	SDRs
AF2	Currency and deposits
AF21	Currency
AF22	Crypto-assets with a corresponding liability designed to act as a general medium of exchange
AF23	Transferable deposits
	Supplementary classification based on currency denomination
AF23S11	Denominated in domestic currency
AF23S12	Denominated in foreign currency
	Supplementary classification based on residence of the counterparty
AF23S21	Liabilities of resident financial corporation
AF23S22	Liabilities of non-resident financial corporation
AF29	Other deposits
	Supplementary classification based on currency denomination
AF29S11	Denominated in domestic currency
AF29S12	Denominated in foreign currency
	Supplementary classification based on residence of the counterparty
AF29S21	Liabilities of resident financial corporation
AF29S22	Liabilities of non-resident financial corporation
AF3	Debt securities
	Supplementary detail related to ESG and Green Finance
AF3ow1	ESG debt securities
AF3ow11	Social debt securities
AF3ow12	Green debt securities
AF3ow13	Sustainability debt securities
AF3ow14	Sustainability-linked debt securities
AF3ow19	Other ESG debt securities
	Supplementary detail related to FDI
AF3ow2	Debt securities included in FDI
	Supplementary detail related to valuation
AF3ow3	Debt securities at nominal value (for liability positions)
AF31	Short-term debt securities
	Supplementary classification on listing
AF31S11	Listed short-term debt securities
AF31S12	Unlisted short-term debt securities
AF32	Long-term debt securities
	Supplementary classification on listing
AF32S11	Listed long-term debt securities
AF32S12	Unlisted long-term debt securities
	Supplementary classification based on remaining maturity
AF32S21	Long-term debt securities with a remaining maturity of one year or less
AF32S22	Long-term debt securities with a remaining maturity of more than one year

AF33	Crypto assets with a corresponding liability designed to act as a medium of exchange within a platform, short-term
AF34	Crypto assets with a corresponding liability designed to act as a medium of exchange within a platform, long-term
AF35	Utility tokens
AF4	Loans
	Supplementary detail related to ESG and Green Finance
AF4ow1	ESG loans
AF4ow12	Green loans
	Supplementary detail related to FDI
AF4ow2	Loans included in FDI
	Supplementary details in view of non-bank financial intermediation
AF4ow3	Market value of loan portfolio (assets of financial corporations)
AF4ow41	Repurchase agreements
AF4ow42	Securities lending with cash collateral
AF4ow43	Margin lending
	Supplementary detail related to concessional lending and performance of loans
AF4ow51	Concessional loans at nominal value
AF4ow52	Concessional loans at adjusted nominal value
AF4ow61	Non-performing loans at nominal value (for asset positions)
AF4ow62	Non-performing loans at market value (for asset positions)
AF41	Short-term loans
AF42	Long-term loans
	Supplementary classification based on remaining maturity
AF42S21	Long-term loans with a remaining maturity of one year or less
AF42S22	Long-term loans with a remaining maturity of more than one year
AF5	Equity and investment shares/units
AF51	Equity
	Supplementary detail related to ESG and Green Finance
AF51ow1	ESG equity
AF51ow12	Green equity
	Supplementary detail related to FDI
AF51ow2	Equity included in FDI
	Supplementary detail related to negative positions
AF51ow3	Negative equity positions
AF511	Listed shares
AF512	Unlisted shares
AF519	Other equity and equity in international organizations
AF52	Investment fund shares/units
	Supplementary classification on listing
AF52S11	Listed investment fund shares/units
AF52S12	Unlisted investment fund shares/units
	Supplementary detail related to ESG and Green Finance
AF52ow1	ESG investment fund shares/units
AF52ow12	Green investment fund shares/units
AF521	Money market fund shares/units
AF522	Non-MMF investment fund shares/units
AF6	Insurance, pension and standardized guarantee schemes
AF61	Non-life insurance technical reserves
AF62	Life insurance and annuity entitlements
AF63	Pension entitlements
AF64	Claims of pension funds on pension sponsors
AF65	Entitlements to non-pension benefits
AF66	Provisions for calls under standardized guarantees

AF7	Financial derivatives and employee stock options
AF71	Financial derivatives
AF711	Foreign currency derivatives
AF712	Single currency interest rate derivatives
AF713	Equity derivatives
AF714	Commodity derivatives
AF715	Credit derivatives
AF719	Other derivatives
	Supplementary classification based on instruments (and supplementary classification in view of non-bank financial intermediation)
AF71S11	Options
AF71S12	Forwards and related instruments (other than futures and swaps)
AF71S13	Futures
AF71S14	Swaps
AF71S15	Credit derivatives
AF71S19	Other and hybrid derivatives
	Supplementary classification based on trading venue (also relevant for non-bank financial intermediation)
AF71S21	Exchange traded derivatives
AF71S22	Over-the-counter derivatives (cleared)
AF71S23	Over-the-counter derivatives (not cleared)
AF72	Employee stock options
AF8	Other accounts receivable/payable
	Supplementary detail related to FDI
AF8ow2	Other accounts receivable/payable included in FDI
AF81	Trade credit and advances
AF82	Emission permits
AF89	Other accounts receivable/payable n.e.c.
	Other supplementary information
AF9X1	Constructive liabilities
AF9X2	Provisions
AF9X21	Financial assets related provisions
AF9X22	Non-financial assets related provisions
AF9X23	Unrelated to asset ownership provisions

C. Other items

2. Labour-related indicators

A2.40 The following codes apply to labour related indicators described in chapter 16.

	Labour-related indicators
LAB1	Hours worked, total
LAB12	Hours worked, employees
LAB13	Hours worked, self-employed
LAB2	Full-time equivalents, total
LAB21	Full-time equivalents, employees
LAB22	Full-time equivalents, self-employed
LAB3	Persons employed, total
LAB31	Persons employed, employees
LAB32	Persons employed, self-employed
LAB4	Jobs, total
LAB41	Jobs filled, employees
LAB42	Jobs filled, self-employed
LAB43	Vacancies
LAB5	Underutilised persons
LAB51	Unemployed persons
LAB52	Underemployed persons
LAB6	Labour costs
LAB61	Total labour income
LAB611 (= D1)	Remuneration of employees
LAB612	Labour income from self-employment
LAB62	Employment-related costs
LAB63	Taxes on payroll and workforce
LAB64	Subsides on payroll and workforce (-)

3. Capital services

A2.41 The following codes apply to capital services described in chapter 17.

	Capital services
CS1	Capital services from produced non-financial assets (excluding natural resources)
CS11	Capital services from fixed assets (excluding natural resources)
CS111 (= NF12)	Depreciation (-)
CS112	Net return to capital
CS12	Capital services from inventories (excluding natural resources)
CS2	Capital services from non-produced non-financial assets (excluding natural resources
CS3	Capital services from natural resources
CS31	Capital services from fixed assets of natural resources
CS311 (= NF32)	Depreciation (-)
CS312	Net return to capital
CS32	Capital services from inventories of natural resources
CS33	Capital services from non-produced natural resources
CS331 (=NF35)	Depletion
CS332	Net return to capital

Annex 3: The sequence of accounts

Production account
Expenditures

Code		S11 Non-financial corporations	S12 Financial corporations	S13 General government	S14 Households	S15 NPISHs	S1 Total economy	S2 Rest of the world	Goods and services	Total
P7	Imports of goods and services								499	499
P71	Imports of goods								392	392
P72	Imports of services								107	107
P6	Exports of goods and services							540		540
P61	Exports of goods							462		462
P62	Exports of services							78		78
P1	Output								3 617	3 617
P11	Market output								3 075	3 075
P12	Output for own final use								147	147
P13	Non-market output								395	395
P2	Intermediate consumption	1 477	52	220	115	17	1 881			1 881
D21	Taxes on products								141	141
D31	Subsidies on products (-)								- 8	- 8
B1g	Value added, gross / Gross domestic product	1 331	94	138	155	18	1 869			1 869
P51d	Depreciation	157	12	27	23	3	222			222
P8	Depletion	30			0		30			30
B1n	*Value added, net / Net domestic product*	1 144	82	111	132	15	1 617			1 617
B11	*External balance of international trade in goods and services*							- 41		- 41

Generation of earned income account
Expenditures

Code	Transactions and balancing items	S11 Non-financial corporations	S12 Financial corporations	S13 General government	S14 Households	S15 NPISHs	S1 Total economy	S2 Rest of the world	Goods and services	Total
D1	Remuneration of employees	986	44	98	11	11	1 150			1 150
D11	Wages and salaries	841	29	63	11	6	950			950
D12	Employers' social contributions	145	15	35	0	5	200			200
D121	Employers' actual social contributions	132	14	31	0	4	181			181
D1211	Employers' actual pension contributions	122	14	28	0	4	168			168
D1212	Employers' actual non-pension contributions	10	0	3	0	0	13			13
D122	Employers' imputed social contributions	13	1	4	0	1	19			19
D1221	Employers' imputed pension contributions	12	1	4	0	1	18			18
D1222	Employers' imputed non-pension contributions	1	0	0	0	0	1			1
D2	Taxes on production and imports						235			235
D21	Taxes on products						141			141
D211	Value added type taxes (VAT)						121			121
D212	Taxes and duties on imports excluding VAT						17			17
D2121	Import duties						17			17
D2122	Taxes on imports excluding VAT and import duties						0			0
D213	Export taxes						1			1
D214	Taxes on products excluding VAT, import and export taxes						2			2
D29	Other taxes on production	88	4	1	0	1	94			94
D3	Subsidies						- 44			- 44
D31	Subsidies on products						- 8			- 8
D311	Import subsidies						0			0
D312	Export subsidies						0			0
D319	Other subsidies on products						- 8			- 8
D39	Other subsidies on production	- 35	0	0	- 1	0	- 36			- 36
B2g	Operating surplus, gross	292	46	39	84	6	467			467
B3g	Mixed income, gross				61		61			61
P51d1	Depreciation on gross operating surplus	157	12	27	15	3	214			214
P51d2	Depreciation on gross mixed income				8		8			8
P81	Depletion on gross operating surplus	30			0		30			30
P82	Depletion on gross mixed income				0		0			0
B2n	*Operating surplus, net*	105	34	12	69	3	223			223
B3n	*Mixed income, net*				53		53			53

Production account

Revenues

Code		S11 Non-financial corporations	S12 Financial corporations	S13 General government	S14 Households	S15 NPISHs	S1 Total economy	S2 Rest of the world	Goods and services	Total
P7	Imports of goods and services							499		499
P71	Imports of goods							392		392
P72	Imports of services							107		107
P6	Exports of goods and services								540	540
P61	Exports of goods								462	462
P62	Exports of services								78	78
P1	Output	2 808	146	358	270	35	3 617			3 617
P11	Market output	2 808	144	0	123	0	3 075			3 075
P12	Output for own final use	0	0	0	147	0	147			147
P13	Non-market output		2	358		35	395			395
P2	Intermediate consumption								1 881	1 881
D21	Taxes on products						141			141
D31	Subsidies on products (-)						- 8			- 8

Generation of earned income account

Revenues

Code	Transactions and balancing items	S11 Non-financial corporations	S12 Financial corporations	S13 General government	S14 Households	S15 NPISHs	S1 Total economy	S2 Rest of the world	Goods and services	Total
B1g	Value added, gross / Gross domestic product	1 331	94	138	155	18	1 869			1 869
B1n	*Value added, net / Net domestic product*	1 144	82	111	132	15	1 617			1 617
D1	Remuneration of employees									
D11	Wages and salaries									
D12	Employers' social contributions									
D121	Employers' actual social contributions									
D1211	Employers' actual pension contributions									
D1212	Employers' actual non-pension contributions									
D122	Employers' imputed social contributions									
D1221	Employers' imputed pension contributions									
D1222	Employers' imputed non-pension contributions									
D2	Taxes on production and imports									
D21	Taxes on products									
D211	Value added type taxes (VAT)									
D212	Taxes and duties on imports excluding VAT									
D2121	Import duties									
D2122	Taxes on imports excluding VAT and import duties									
D213	Export taxes									
D214	Taxes on products excluding VAT, import and export taxes									
D29	Other taxes on production									
D3	Subsidies									
D31	Subsidies on products									
D311	Import subsidies									
D312	Export subsidies									
D319	Other subsidies on products									
D39	Other subsidies on production									

Allocation of earned income account
Expenditures

Code	Transactions and balancing items	S11 Non-financial corporations	S12 Financial corporations	S13 General government	S14 Households	S15 NPISHs	S1 Total economy	S2 Rest of the world	Goods and services	Total
D1	Remuneration of employees							6		6
D11	Wages and salaries							6		6
D12	Employers' social contributions							0		0
D121	Employers' actual social contributions							0		0
D1211	Employers' actual pension contributions							0		0
D1212	Employers' actual non-pension contributions							0		0
D122	Employers' imputed social contributions							0		0
D1221	Employers' imputed pension contributions							0		0
D1222	Employers' imputed non-pension contributions							0		0
D2	Taxes on production and imports									0
D21	Taxes on products									0
D211	Value added type taxes (VAT)									0
D212	Taxes and duties on imports excluding VAT									0
D2121	Import duties									0
D2122	Taxes on imports excluding VAT and import duties									0
D213	Export taxes									0
D214	Taxes on products excluding VAT, import and export taxes									0
D29	Other taxes on production									0
D3	Subsidies									0
D31	Subsidies on products									0
D311	Import subsidies									0
D312	Export subsidies									0
D319	Other subsidies on products									0
D39	Other subsidies on production									0
D4	Property income	134	168	42	41	6	391	44		435
D41	Investment income	103	168	35	14	6	326	44		370
D411	Interest and similar returns	56	106	35	14	6	217	13		230
D412	Income on equity	47	15				62	31		93
D4121	Dividends	39	15				54	13		67
D4122	Withdrawals from income of quasi-corporations	8	0				8	4		12
D4123	Reinvested earnings on foreign direct investment	0	0				0	14		14
D413	Investment income disbursements	0	47				47	0		47
D4131	Investment income attributable to insurance policy holders		25				25	0		25
D4132	Investment income payable on pension entitlements		8				8	0		8
D4133	Investment income attributable to the surplus/shortfall in defined benefit pension funds	0	0	0		0	0	0		0
D4134	Investment income attributable to investment fund share holders		14				14	0		14
D42	Rent	31	0	7	27	0	65			65
D42dep (-)	Depletion borne by the legal owner	- 18			0		- 18			- 18
B5g	Balance of earned incomes, gross / National income, gross	248	27	216	1 381	7	1 879			1 879
B5n	Balance of earned income, net / National income, net	61	15	189	1 358	4	1 627			1 627

Entrepreneurial account
Expenditures

Code	Transactions and balancing items	S11 Non-financial corporations	S12 Financial corporations	S13 General government	S14 Households	S15 NPISHs	S1 Total economy	S2 Rest of the world	Goods and services	Total
D4	Property income	87	153				240			240
D41	Investment income	56	153				209			209
D411	Interest and similar returns	56	106				162			162
D412	Income on equity									
D4121	Dividends									
D4122	Withdrawals from income of quasi-corporations									
D4123	Reinvested earnings on foreign direct investment									
D413	Investment income disbursements	0	47				47			47
D4131	Investment income attributable to insurance policy holders		25				25			25
D4132	Investment income payable on pension entitlements		8				8			8
D4133	Investment income attributable to the surplus/shortfall in defined benefit pension funds	0	0				0			0
D4134	Investment income attributable to investment fund share holders		14				14			14
D42	Rent	31	0				31			31
D42dep (-)	Depletion borne by the legal owner	- 18			0		- 18			- 18
B4g	Entrepreneurial income, gross	295	42				337			337
B4n	Entrepreneurial income, net	108	30				138			138

Allocation of earned income account

Revenues

Code	Transactions and balancing items	S11 Non-financial corporations	S12 Financial corporations	S13 General government	S14 Households	S15 NPISHs	S1 Total economy	S2 Rest of the world	Goods and services	Total
B2g	Operating surplus, gross	292	46	39	84	6	467			467
B3g	Mixed income, gross				61		61			61
B2n	*Operating surplus, net*	105	34	12	69	3	223			223
B3n	*Mixed income, net*				53		53			53
D1	Remuneration of employees				1 154		1 154	2		1 156
D11	Wages and salaries				954		954	2		956
D12	Employers' social contributions				200		200	0		200
D121	Employers' actual social contributions				181		181	0		181
D1211	Employers' actual pension contributions				168		168	0		168
D1212	Employers' actual non-pension contributions				13		13	0		13
D122	Employers' imputed social contributions				19		19	0		19
D1221	Employers' imputed pension contributions				18		18	0		18
D1222	Employers' imputed non-pension contributions				1		1	0		1
D2	Taxes on production and imports			235			235			235
D21	Taxes on products			141			141			141
D211	Value added type taxes (VAT)			121			121			121
D212	Taxes and duties on imports excluding VAT			17			17			17
D2121	Import duties			17			17			17
D2122	Taxes on imports excluding VAT and import duties			0			0			0
D213	Export taxes			1			1			1
D214	Taxes on products excluding VAT, import and export taxes			2			2			2
D29	Other taxes on production			94			94			94
D3	Subsidies			- 44			- 44			- 44
D31	Subsidies on products			- 8			- 8			- 8
D311	Import subsidies			0			0			0
D312	Export subsidies			0			0			0
D319	Other subsidies on products			- 8			- 8			- 8
D39	Other subsidies on production			- 36			- 36			- 36
D4	Property income	72	149	46	123	7	397	38		435
D41	Investment income	55	146	22	102	7	332	38		370
D411	Interest and similar returns	33	106	14	49	7	209	21		230
D412	Income on equity	14	32	7	23	0	76	17		93
D4121	Dividends	10	25	5	13	0	53	14		67
D4122	Withdrawals from income of quasi-corporations			2	7		9	3		12
D4123	Reinvested earnings on foreign direct investment	4	7	0	3	0	14	0		14
D413	Investment income disbursements	8	8	1	30	0	47	0		47
D4131	Investment income attributable to insurance policy holders	5	0	0	20	0	25	0		25
D4132	Investment income payable on pension entitlements				8		8	0		8
D4133	Investment income attributable to the surplus/shortfall in defined benefit pension funds		0				0	0		0
D4134	Investment income attributable to investment fund share holders	3	8	1	2	0	14	0		14
D42	Rent	17	3	24	21	0	65			65
D42dep (-)	Depletion borne by the legal owner			- 18			- 18			- 18

Entrepreneurial account

Revenues

Code	Transactions and balancing items	S11 Non-financial corporations	S12 Financial corporations	S13 General government	S14 Households	S15 NPISHs	S1 Total economy	S2 Rest of the world	Goods and services	Total
B2g	Operating surplus, gross	292	46	39	84	6	467			467
B3g	Mixed income, gross				61		61			61
B2n	Operating surplus, net	105	34	12	69	3	223			223
B3n	Mixed income, net				53		53			53
D4	Property income	72	149				221			221
D41	Investment income	55	146				201			201
D411	Interest and similar returns	33	106				139			139
D412	Income on equity	14	32				46			46
D4121	Dividends	10	25				35			35
D4122	Withdrawals from income of quasi-corporations						0			0
D4123	Reinvested earnings on foreign direct investment	4	7				11			11
D413	Investment income disbursements	8	8				16			16
D4131	Investment income attributable to insurance policy holders	5	0				5			5
D4132	Investment income payable on pension entitlements									
D4133	Investment income attributable to the surplus/shortfall in defined benefit pension funds	0	0				0			0
D4134	Investment income attributable to investment fund share holders	3	8				11			11
D42	Rent	17	3				20			20
D42dep (-)	Depletion borne by the legal owner						0			0

Allocation of other earned income account
Expenditures

Code	Transactions and balancing items	S11 Non-financial corporations	S12 Financial corporations	S13 General government	S14 Households	S15 NPISHs	S1 Total economy	S2 Rest of the world	Goods and services	Total
D1	Remuneration of employees							6		6
D11	Wages and salaries							6		6
D12	Employers' social contributions							0		0
D121	Employers' actual social contributions							0		0
D1211	Employers' actual pension contributions							0		0
D1212	Employers' actual non-pension contributions							0		0
D122	Employers' imputed social contributions							0		0
D1221	Employers' imputed pension contributions							0		0
D1222	Employers' imputed non-pension contributions							0		0
D2	Taxes on production and imports									
D21	Taxes on products									
D211	Value added type taxes (VAT)									
D212	Taxes and duties on imports excluding VAT									
D2121	Import duties									
D2122	Taxes on imports excluding VAT and import duties									
D213	Export taxes									
D214	Taxes on products excluding VAT, import and export taxes									
D29	Other taxes on production									
D3	Subsidies									
D31	Subsidies on products									
D311	Import subsidies									
D312	Export subsidies									
D319	Other subsidies on products									
D39	Other subsidies on production									
D4	Property income	47	15	42	41	6	151	44		195
D41	Investment income	47	15	35	14	6	117	44		161
D411	Interest and similar returns			35	14	6	55	13		68
D412	Income on equity	47	15				62	31		93
D4121	Dividends	39	15				54	13		67
D4122	Withdrawals from income of quasi-corporations	8	0				8	4		12
D4123	Reinvested earnings on foreign direct investment	0	0				0	14		14
D413	Investment income disbursements							0		0
D4131	Investment income attributable to insurance policy holders							0		0
D4132	Investment income payable on pension entitlements							0		0
D4133	Investment income attributable to the surplus/shortfall in defined benefit pension funds							0		0
D4134	Investment income attributable to investment fund share holders							0		0
D42	Rent			7	27	0	34	0		34
D42dep (-)	Depletion borne by the legal owner				0		0			0
B5g	Balance of earned incomes, gross / National income, gross	248	27	216	1 381	7	1 879			1 879
B5n	Balance of earned income, net / National income, net	61	15	189	1 358	4	1 627			1 627

Allocation of other earned income account

Revenues

Code	Transactions and balancing items	S11 Non-financial corporations	S12 Financial corporations	S13 General government	S14 Households	S15 NPISHs	S1 Total economy	S2 Rest of the world	Goods and services	Total
B4g	Entrepreneurial income, gross	295	42				337			337
B4n	Entrepreneurial income, net	108	30				138			138
D1	Remuneration of employees				1 154		1 154	2		1 156
D11	Wages and salaries				954		954	2		956
D12	Employers' social contributions				200		200	0		200
D121	Employers' actual social contributions				181		181	0		181
D1211	Employers' actual pension contributions				168		168	0		168
D1212	Employers' actual non-pension contributions				13		13	0		13
D122	Employers' imputed social contributions				19		19	0		19
D1221	Employers' imputed pension contributions				18		18	0		18
D1222	Employers' imputed non-pension contributions				1		1	0		1
D2	Taxes on production and imports			235			235			235
D21	Taxes on products			141			141			141
D211	Value added type taxes (VAT)			121			121			121
D212	Taxes and duties on imports excluding VAT			17			17			17
D2121	Import duties			17			17			17
D2122	Taxes on imports excluding VAT and import duties			0			0			0
D213	Export taxes			1			1			1
D214	Taxes on products excluding VAT, import and export taxes			2			2			2
D29	Other taxes on production			94			94			94
D3	Subsidies			- 44			- 44			- 44
D31	Subsidies on products			- 8			- 8			- 8
D311	Import subsidies			0			0			0
D312	Export subsidies			0			0			0
D319	Other subsidies on products			- 8			- 8			- 8
D39	Other subsidies on production			- 36			- 36			- 36
D4	Property income			46	123	7	176	38		214
D41	Investment income			22	102	7	131	38		169
D411	Interest and similar returns			14	49	7	70	21		91
D412	Income on equity			7	23	0	30	17		47
D4121	Dividends			5	13	0	18	14		32
D4122	Withdrawals from income of quasi-corporations			2	7	0	9	3		12
D4123	Reinvested earnings on foreign direct investment			0	3	0	3	0		3
D413	Investment income disbursements			1	30	0	31	0		31
D4131	Investment income attributable to insurance policy holders			0	20	0	20	0		20
D4132	Investment income payable on pension entitlements				8		8	0		8
D4133	Investment income attributable to the surplus/shortfall in defined benefit pension funds							0		0
D4134	Investment income attributable to investment fund share holders			1	2	0	3	0		3
D42	Rent			24	21	0	45	0		45
D42dep (-)	Depletion borne by the legal owner			- 18	0	0	- 18			- 18

Income transfers other than transfers in kind account
Expenditures

Code	Transactions and balancing items	S11 Non-financial corporations	S12 Financial corporations	S13 General government	S14 Households	S15 NPISHs	S1 Total economy	S2 Rest of the world	Goods and services	Total
	Current transfers	98	277	248	582	7	1 212	17		1 229
D5	Current taxes on income, wealth, etc.	24	10	0	178	0	212	1		213
D51	Taxes on income	20	7	0	176	0	0	1		1
D59	Other current taxes	4	3	0	2	0	0			0
D61	Social contributions less service charges				333		333	0		333
D611	Employers' actual social contributions				181		181	0		181
D6111	Employers' actual pension contributions				168		168	0		168
D6112	Employers' actual non-pension contributions				13		13	0		13
D612	Employers' imputed social contributions				19		19	0		19
D6121	Employers' imputed pension contributions				18		18	0		18
D6122	Employers' imputed non-pension contributions				1		1	0		1
D613	Households' actual social contributions				129		129	0		129
D6131	Households' actual pension contributions				115		115	0		115
D6132	Households' actual non-pension contributions				14		14	0		14
D614	Households' social contributions supplements				10		10	0		10
D6141	Households' pension contribution supplements				8		8	0		8
D6142	Households' non-pension contribution supplements				2		2	0		2
D615	Social insurance scheme service charges				6		6	0		6
D62	Social benefits other than social transfers in kind	62	205	112	0	5	384	0		384
D621	Social security benefits in cash			53			53	0		53
D6211	Social security pension benefits			45			45	0		45
D6212	Social security non-pension benefits in cash			8			8	0		8
D622	Other social insurance benefits	62	205	7	0	5	279	0		279
D6221	Other social insurance pension benefits	49	193	5	0	3	250	0		250
D6222	Other social insurance non-pension benefits	13	12	2	0	2	29	0		29
D623	Social assistance benefits in cash			52			0			0
D7	Other current transfers	12	62	136	71	2	283	16		299
D71	Non-life insurance premiums less service charges	8	13	4	31	0	56	2		58
D711	Non-life direct insurance premiums less service charges	8	0	4	31	0	43	1		44
D712	Non-life reinsurance premiums less service charges		13				13	1		14
D72	Non-life insurance claims		48				48	12		60
D721	Non-life direct insurance claims		45				45	0		45
D722	Non-life reinsurance claims		3				3	12		15
D73	Current transfers within general government			96			96	0		96
D74	Current international cooperation			31			31	1		32
D75	Miscellaneous current transfers	4	1	5	40	2	52	1		53
D751	Current transfers to NPISHs	1	1	5	29	0	36	0		36
D752	Current transfers between resident and non-resident households				7		7	1		8
D759	Other miscellaneous current transfers	3	0	0	4	2	9	0		9
B6g	Disposable income, gross	222	25	335	1 219	40	1 841			1 841
B6n	*Disposable income, net*	35	13	308	1 196	37	1 589			1 589

Income transfers other than transfers in kind account

Revenues

Code	Transactions and balancing items	S11 Non-financial corporations	S12 Financial corporations	S13 General government	S14 Households	S15 NPISHs	S1 Total economy	S2 Rest of the world	Goods and services	Total
B5g	Balance of earned incomes, gross / National income, gross	248	27	216	1 381	7	1 879			1 879
B5n	*Balance of earned income, net / National income, net*	61	15	189	1 358	4	1 627			1 627
	Current transfers	72	275	367	420	40	1 174	55		1 229
D5	Current taxes on income, wealth, etc.			213			213	0		213
D51	Taxes on income			1			1	0		1
D59	Other current taxes			0			0			0
D61	Social contributions less service charges	66	213	50	0	4	333	0		333
D611	Employers' actual social contributions	31	110	38	0	2	181	0		181
D6111	Employers' actual pension contributions	27	104	35	0	2	168	0		168
D6112	Employers' actual non-pension contributions	4	6	3	0	0	13	0		13
D612	Employers' imputed social contributions	12	2	4	0	1	19	0		19
D6121	Employers' imputed pension contributions	12	1	4	0	1	18	0		18
D6122	Employers' imputed non-pension contributions	0	1	0	0	0	1	0		1
D613	Households' actual social contributions	25	94	9	0	1	129	0		129
D6131	Households' actual pension contributions	19	90	6	0	0	115	0		115
D6132	Households' actual non-pension contributions	6	4	3	0	1	14	0		14
D614	Households' social contributions supplements		10				10	0		10
D6141	Households' pension contribution supplements		8				8	0		8
D6142	Households' non-pension contribution supplements		2				2	0		2
D615	Social insurance scheme service charges	2	3	1			6	0		6
D62	Social benefits other than social transfers in kind				384		384	0		384
D621	Social security benefits in cash				53		53	0		53
D6211	Social security pension benefits				45		45	0		45
D6212	Social security non-pension benefits in cash				8		8	0		8
D622	Other social insurance benefits				279		279	0		279
D6221	Other social insurance pension benefits				250		250	0		250
D6222	Other social insurance non-pension benefits				29		29	0		29
D623	Social assistance benefits in cash				0		0			0
D7	Other current transfers	6	62	104	36	36	244	55		299
D71	Non-life insurance premiums less service charges		47				47	11		58
D711	Non-life direct insurance premiums less service charges		44				44			44
D712	Non-life reinsurance premiums less service charges		3				3	11		14
D72	Non-life insurance claims	6	15	1	35	0	57	3		60
D721	Non-life direct insurance claims	6		1	35		42	3		45
D722	Non-life reinsurance claims		15				15	0		15
D73	Current transfers within general government			96			96	0		96
D74	Current international cooperation			1			1	31		32
D75	Miscellaneous current transfers	0	0	6	1	36	43	10		53
D751	Current transfers to NPISHs					36	36			36
D752	Current transfers between resident and non-resident households				1		1	7		8
D759	Other miscellaneous current transfers			6			6	3		9

Use of disposable income account
Expenditures

Code	Transactions and balancing items	S11 Non-financial corporations	S12 Financial corporations	S13 General government	S14 Households	S15 NPISHs	S1 Total economy	S2 Rest of the world	Goods and services	Total
P3	Final consumption expenditure		2	362	1 015	35	1 414			1 414
P31	Individual consumption expenditure			184	1 015	34	1 233			1 233
P32	Collective consumption expenditure		2	178		1	181			181
D8	Adjustment for the change in pension and non-pension entitlements	0	11	0		0	11	0		11
B8g	Saving, gross	222	12	- 27	215	5	427			427
B8n	*Saving, net*	35	0	- 54	192	2	175			175
B12	*Current external balance*							- 13		- 13

Social transfers in kind account
Expenditures

Code	Transactions and balancing items	S11 Non-financial corporations	S12 Financial corporations	S13 General government	S14 Households	S15 NPISHs	S1 Total economy	S2 Rest of the world	Goods and services	Total
D63	Social transfers in kind			184		34	218			218
D631	Social transfers in kind - non-market production			180		34	214			214
D632	Social transfers in kind - purchased market production			4			4			4
B7g	Disposable income adjusted for social transfers in kind, gross	222	25	151	1 437	6	1 841			1 841
B7n	*Disposable income adjusted for social transfers in kind, net*	35	13	124	1 414	3	1 589			1 589

Use of disposable income adjusted for social transfers in kind account
Expenditures

Code	Transactions and balancing items	S11 Non-financial corporations	S12 Financial corporations	S13 General government	S14 Households	S15 NPISHs	S1 Total economy	S2 Rest of the world	Goods and services	Total
P4	Actual final consumption		2	178	1 233	1	1 414			1 414
P41	Actual individual consumption				1 233		1 233			1 233
P42	Actual collective consumption		2	178		1	181			181
D8	Adjustment for the change in pension and non-pension entitlements	0	11	0		0	11	0		11
B8g	Saving, gross	222	12	- 27	215	5	427			427
B8n	*Saving, net*	35	0	- 54	192	2	175			175
B12	*Current external balance*							- 13		- 13

Use of disposable income account

Revenues

Code	Transactions and balancing items	S11 Non-financial corporations	S12 Financial corporations	S13 General government	S14 Households	S15 NPISHs	S1 Total economy	S2 Rest of the world	Goods and services	Total
B6g	Disposable income, gross	222	25	335	1 219	40	1 841			1 841
B6n	*Disposable income, net*	35	13	308	1 196	37	1 589			1 589
P3	Final consumption expenditure								1 414	1 414
P31	Individual consumption expenditure								1 233	1 233
P32	Collective consumption expenditure								181	181
D8	Adjustment for the change in pension and non-pension entitlements				11		11	0		11

Social transfers in kind account

Revenues

Code	Transactions and balancing items	S11 Non-financial corporations	S12 Financial corporations	S13 General government	S14 Households	S15 NPISHs	S1 Total economy	S2 Rest of the world	Goods and services	Total
B6g	Disposable income, gross	222	25	335	1 219	40	1 841			1 841
B6n	*Disposable income, net*	35	13	308	1 196	37	1 589			1 589
D63	Social transfers in kind				218		218			218
D631	Social transfers in kind - non-market production				214		214			214
D632	Social transfers in kind - purchased market production				4		4			4

Use of disposable income adjusted for social transfers in kind account

Revenues

Code	Transactions and balancing items	S11 Non-financial corporations	S12 Financial corporations	S13 General government	S14 Households	S15 NPISHs	S1 Total economy	S2 Rest of the world	Goods and services	Total
B7g	Disposable income adjusted for social transfers in kind, gross	222	25	151	1 437	6	1 841			1 841
B7n	*Disposable income adjusted for social transfers in kind, net*	35	13	124	1 414	3	1 589			1 589
P4	Actual final consumption								1 414	1 414
P41	Actual individual consumption								1 233	1 233
P42	Actual collective consumption								181	181
D8	Adjustment for the change in pension and non-pension entitlements				11		11	0		11

Capital account
Changes in assets

Code	Transactions and balancing items	S11 Non-financial corporations	S12 Financial corporations	S13 General government	S14 Households	S15 NPISHs	S1 Total economy	S2 Rest of the world	Goods and services	Total
NF1	Acquisitions less disposals of produced non-financial assets (excluding natural resources)	141	- 4	11	30	2	180			180
NF11 (=P411g)	Gross fixed capital formation	257	8	35	44	5	349			349
AN111	Dwellings									
AN112	Other buildings and structures									
AN113	Machinery and equipment									
AN114	Weapons systems									
AN115	Intellectual property products									
AN116	Costs of ownership transfer on non-produced assets (excluding natural resources)									
NF111	Gross fixed capital formation (excluding costs of ownership transfer)	257	8	35	44	5	349			349
NF112	Costs of ownership transfer on non-produced non-financial assets	0	0	0	0	0	0			0
NF12 (= P511d)	Depreciation (-)	- 142	- 12	- 27	- 20	- 3	- 204			- 204
NF121	Depreciation (excluding costs of ownership transfer) (-)	- 142	- 12	- 27	- 20	- 3	- 204			- 204
NF122	Depreciation costs of ownership transfer on non-produced non-financial assets (-)	0	0	0	0	0	0			0
NF13 (= P521)	Changes in inventories	24	0	0	1	0	25			25
AN121	Materials and supplies									
AN122	Work-in-progress (excluding produced natural resources)									
AN123	Finished goods									
AN124	Military inventories									
AN125	Goods for resale									
NF14 (= P53)	Acquisitions less disposals of valuables	2	0	3	5	0	10			10
AN131	Precious metals and stones									
AN132	Antiques and other art objects									
AN139	Other valuables									
NF2	Acquisitions less disposals of non-produced non-financial assets (excluding natural resources)	- 1	0	0	1	0	0	0		0
AN21	Contracts, leases and licenses									
AN211	Marketable operating leases									
AN212	Permits to undertake specific activities									
AN213	Entitlements to future goods and services on an exclusive basis									
AN214	Non-fungible tokens									
AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange									
AN23	Purchased goodwill and marketing assets									
NF3	Acquisitions less disposals of natural resources	- 8	0	- 16	5	1	- 18			- 18
NF31 (=P512g)	Gross fixed capital formation	23	0	0	4	0	27			27
AN331	Biological resources yielding repeat products									
AN3311	Animal resources yielding repeat products									
AN3312	Tree, crop and plant resources yielding repeat products									
AN3321	Cultivated biological resources yielding once-only products									
AN35	Costs of ownership transfer on non-produced natural resources									
NF311	Gross fixed capital formation (excluding costs of ownership transfer)	6	0	0	4	0	10			10
NF312	Costs of ownership transfer on non-produced natural resources	17	0	0	0	0	17			17
NF32 (= P512d)	Depreciation (-)	- 15	0	0	- 3	0	- 18			- 18
NF321	Depreciation (excluding costs of ownership transfer) (-)	- 5	0	0	- 3	0	- 8			- 8
NF322	Depreciation costs of ownership transfer on non-produced natural resources (-)	- 10	0	0	0	0	- 10			- 10
NF33 (= P522)	Changes in inventories	2	0	0	1	0	3			3
AN333	Work-in-progress on cultivated biological resources									
AN3331	Work-in-progress on cultivated biological resources yielding repeat products									
AN3332	Work-in-progress on cultivated biological resources yielding once-only products									
NF34	Acquisitions less disposals of non-produced natural resources	- 6	0	2	3	1	0			0
AN31	Land									
AN32	Mineral and energy resources									
AN321	Non-renewable mineral and energy resources									
AN322	Renewable energy resources									
AN3322	Non-cultivated biological resources yielding once-only products									
AN34	Water resources									
AN39	Other natural resources									
AN391	Radio spectra									
AN392	Permits to use natural resources									
AN393	Other									
NF35 (= P8)	Depletion (-)	- 12		- 18	0		- 30			- 30
D9r	Capital transfers, receivable									
D91r	Capital taxes, receivable									
D92r	Investment grants, receivable									
D93r	Debt forgiveness, receivable									
D99r	Other capital transfers, receivable									
D9p	Capital transfers, payable									
D91p	Capital taxes, payable									
D92p	Investment grants, payable									
D93p	Debt forgiveness, payable									
D99p	Other capital transfers, payable									
B9	*Net lending (+) / net borrowing (–)*	- 80	- 3	- 77	174	- 4	10	- 10		0

Capital account

Changes in liabilities and net worth

Code	Transactions and balancing items	S11 Non-financial corporations	S12 Financial corporations	S13 General government	S14 Households	S15 NPISHs	S1 Total economy	S2 Rest of the world	Goods and services	Total
B8n	*Saving, net*	35	0	- 54	192	2	175			175
B12	*Current external balance*							- 13		- 13
NF1	Acquisitions less disposals of produced non-financial assets (excluding natural resources)									
NF11 (=P411g)	Gross fixed capital formation								349	349
AN111	Dwellings									
AN112	Other buildings and structures									
AN113	Machinery and equipment									
AN114	Weapons systems									
AN115	Intellectual property products									
AN116	Costs of ownership transfer on non-produced assets (excluding natural resources)									
NF111	Gross fixed capital formation (excluding costs of ownership transfer)								349	349
NF112	Costs of ownership transfer on non-produced non-financial assets								0	0
NF12 (= P511d)	Depreciation (-)									
NF121	Depreciation (excluding costs of ownership transfer) (-)									
NF122	Depreciation costs of ownership transfer on non-produced non-financial assets (-)									
NF13 (= P521)	Changes in inventories								25	25
AN121	Materials and supplies									
AN122	Work-in-progress (excluding produced natural resources)									
AN123	Finished goods									
AN124	Military inventories									
AN125	Goods for resale									
NF14 (= P53)	Acquisitions less disposals of valuables								10	10
AN131	Precious metals and stones									
AN132	Antiques and other art objects									
AN139	Other valuables									
NF2	Acquisitions less disposals of non-produced non-financial assets (excluding natural resources)									
AN21	Contracts, leases and licenses									
AN211	Marketable operating leases									
AN212	Permits to undertake specific activities									
AN213	Entitlements to future goods and services on an exclusive basis									
AN214	Non-fungible tokens									
AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange									
AN23	Purchased goodwill and marketing assets									
NF3	Acquisitions less disposals of natural resources									
NF31 (=P512g)	Gross fixed capital formation								27	27
AN331	Biological resources yielding repeat products									
AN3311	Animal resources yielding repeat products									
AN3312	Tree, crop and plant resources yielding repeat products									
AN3321	Cultivated biological resources yielding once-only products									
AN35	Costs of ownership transfer on non-produced natural resources									
NF311	Gross fixed capital formation (excluding costs of ownership transfer)								10	10
NF312	Costs of ownership transfer on non-produced natural resources								17	17
NF32 (= P512d)	Depreciation (-)									
NF321	Depreciation (excluding costs of ownership transfer) (-)									
NF322	Depreciation costs of ownership transfer on non-produced natural resources (-)									
NF33 (= P522)	Changes in inventories								3	3
AN333	Work-in-progress on cultivated biological resources									
AN3331	Work-in-progress on cultivated biological resources yielding repeat products									
AN3332	Work-in-progress on cultivated biological resources yielding once-only products									
NF34	Acquisitions less disposals of non-produced natural resources									
AN31	Land									
AN32	Mineral and energy resources									
AN321	Non-renewable mineral and energy resources									
AN322	Renewable energy resources									
AN3322	Non-cultivated biological resources yielding once-only products									
AN34	Water resources									
AN39	Other natural resources									
AN391	Radio spectra									
AN392	Permits to use natural resources									
AN393	Other									
NF35 (= P8)	Depletion (-)									
D9r	Capital transfers, receivable	33	0	6	23	0	62	4		66
D91r	Capital taxes, receivable			2			2			2
D92r	Investment grants, receivable	23	0	0	0	0	23	4		27
D93r	Debt forgiveness, receivable	0	0	0	0	0	0	0		0
D99r	Other capital transfers, receivable	10	0	4	23	0	37			37
D9p	Capital transfers, payable	- 16	- 7	- 34	- 5	- 3	- 65	- 1		- 66
D91p	Capital taxes, payable	0	0	0	- 2	0	- 2	0		- 2
D92p	Investment grants, payable			- 27			- 27			- 27
D93p	Debt forgiveness, payable	0	0	0	0	0	0	0		0
D99p	Other capital transfers, payable	- 16	- 7	- 7	- 3	- 3	- 36	- 1		- 37
B101	Changes in net worth due to saving and capital transfers	52	- 7	- 82	210	- 1	172	- 10		162

Financial account
Changes in assets

Code	Transactions and balancing items	S11 Non-financial corporations	S12 Financial corporations	S13 General government	S14 Households	S15 NPISHs	S1 Total economy	S2 Rest of the world	Goods and services	Total
	Net acquisition of financial assets	60	170	16	189	2	437	48		485
F1	Monetary gold and SDRs		- 1				- 1	1		0
F11	Monetary gold		0				0	0		0
F12	SDRs		- 1				- 1	1		0
F2	Currency and deposits	16	8	0	64	2	90	11		101
F21	Currency	5	15	2	10	1	33	3		36
F22	Crypto-assets with a corresponding liability designed to act as a general medium of exchange	0	0	0	1	0	1	0		1
F23	Transferable deposits	7	- 7	- 1	26	1	26	2		28
F29	Other deposits	4	0	- 1	27	0	30	6		36
F3	Debt securities	7	66	4	10	- 1	86	10		96
F31	Short-term debt securities	10	13	1	3	0	27	2		29
F32	Long-term debt securities	- 3	53	3	7	- 1	59	7		66
F33	Crypto assets with a corresponding liability designed to act as a medium of exchange within a platform, short-term	0	0	0	0	0	0	0		0
F34	Crypto assets with a corresponding liability designed to act as a medium of exchange within a platform, long-term	0	0	0	0	0	0	1		1
F35	Utility tokens	0	0	0	0	0	0	0		0
F4	Loans	19	53	3	3	0	78	4		82
F41	Short-term loans	14	4	1	3	0	22	3		25
F42	Long-term loans	5	49	2	0	0	56	1		57
F5	Equity and investment fund shares / units	10	28	3	66	0	107	12		119
F51	Equity	10	25	3	53	0	91	12		103
F511	Listed shares	5	23	1	48	0	77	10		87
F512	Unlisted shares	3	1	1	2	0	7	2		9
F519	Other equity and equity in international organizations	2	1	1	3	0	7	0		7
F52	Investment fund shares/units	0	3	0	13	0	16	0		16
F521	Money market fund shares/units	0	2	0	5	0	7	0		7
F522	Non MMF investment fund shares/units	0	1	0	8	0	9	0		9
F6	Insurance, pension and standardized guarantee schemes	1	7	1	39	0	48	0		48
F61	Non-life insurance technical reserves	1	2	0	4	0	7	0		7
F62	Life insurance and annuity entitlements	0	0	0	22	0	22	0		22
F63	Pension entitlements				11		11	0		11
F64	Claims of pension funds on pension sponsors		3				3	0		3
F65	Entitlements to non-pension benefits				2		2	0		2
F66	Provisions for calls under standardized guarantees	0	2	1	0	0	3	0		3
F7	Financial derivatives and employee stock options	3	8	0	3	0	14	0		14
F71	Financial derivatives	3	8	0	1	0	12	0		12
F711	Foreign currency derivatives						0			0
F712	Single currency interest rate derivatives						0			0
F713	Equity derivatives						0			0
F713	Commodity derivatives						0			0
F715	Credit derivatives						0			0
F719	Other derivatives						0			0
F72	Employee stock options	0			2		2			2
F8	Other accounts receivable/payable	4	1	5	4	1	15	10		25
F81	Trade credit and advances	3		1	3		7	8		15
F82	Emission permits						0			0
F89	Other	1	1	4	1	1	8	2		10

Financial account

Changes in liabilities and net worth

Code	Transactions and balancing items	S11 Non-financial corporations	S12 Financial corporations	S13 General government	S14 Households	S15 NPISHs	S1 Total economy	S2 Rest of the world	Goods and services	Total
B9	*Net lending (+) / net borrowing (–)*	- 80	- 3	- 77	174	- 4	10	- 10		0
	Net acquisition of liabilities	140	173	93	15	6	427	58		485
F1	Monetary gold and SDRs	0	0	0	0	0	0	0		0
F11	Monetary gold						0			0
F12	SDRs						0			0
F2	Currency and deposits	0	65	37	0	0	102	- 1		101
F21	Currency			35			35	1		36
F22	Crypto-assets with a corresponding liability designed to act as a general medium of exchange	0	0				0	1		1
F23	Transferable deposits		26	2			28	0		28
F29	Other deposits		39				39	- 3		36
F3	Debt securities	7	30	38	0	0	75	21		96
F31	Short-term debt securities	2	18	4	0	0	24	5		29
F32	Long-term debt securities	4	12	34	0	0	50	16		66
F33	Crypto assets with a corresponding liability designed to act as a medium of exchange within a platform, short-term	0	0				0	0		0
F34	Crypto assets with a corresponding liability designed to act as a medium of exchange within a platform, long-term	1	0				1	0		1
F35	Utility tokens	0	0				0	0		0
F4	Loans	21	0	9	11	6	47	35		82
F41	Short-term loans	4	0	3	2	2	11	14		25
F42	Long-term loans	17	0	6	9	4	36	21		57
F5	Equity and investment fund shares / units	83	22	0	0	0	105	14		119
F51	Equity	83	11	0	0	0	94	9		103
F511	Listed shares	77	7				84	3		87
F512	Unlisted shares	3	4				7	2		9
F519	Other equity and equity in international organizations	3					3	4		7
F52	Investment fund shares/units	0	11	0	0	0	11	5		16
F521	Money market fund shares/units		5				5	2		7
F522	Non MMF investment fund shares/units		6				6	3		9
F6	Insurance, pension and standardized guarantee schemes	0	48	0	0	0	48	0		48
F61	Non-life insurance technical reserves		7				7	0		7
F62	Life insurance and annuity entitlements		22				22	0		22
F63	Pension entitlements		11				11	0		11
F64	Claims of pension funds on pension sponsors		3				3	0		3
F65	Entitlements to non-pension benefits		2				2	0		2
F66	Provisions for calls under standardized guarantees		3	0			3	0		3
F7	Financial derivatives and employee stock options	3	8	0	0	0	11	3		14
F71	Financial derivatives	2	7	0	0	0	9	3		12
F711	Foreign currency derivatives						0			0
F712	Single currency interest rate derivatives						0			0
F713	Equity derivatives						0			0
F713	Commodity derivatives						0			0
F715	Credit derivatives						0			0
F719	Other derivatives						0			0
F72	Employee stock options	1	1				2			2
F8	Other accounts receivable/payable	26	0	9	4	0	39	- 14		25
F81	Trade credit and advances	6	0	6	4	0	16	- 1		15
F82	Emission permits						0			0
F89	Other	20	0	3	0	0	23	- 13		10

Other changes in the volume of assets and liabilities account
Changes in assets

	Other flows	S11 Non-financial corporations	S12 Financial corporations	S13 General government	S14 Households	S15 NPISHs	S1 Total economy	S2 Rest of the world account	Goods and services account	Total
K1	Economic appearance of assets	26	0	7	0	0	33			33
K1 AN1	Produced non-financial assets (excluding natural resources)			3			3			3
K1 AN2	Non-produced non-financial assets (excluding natural resources)	4	0	0	0	0	4			4
K1 AN3	Natural resources	22		4			26			26
K1 AF	Financial assets and liabilities						0			0
K2	Economic disappearance of assets	- 5	0	- 1	0	0	- 6			- 6
K2 AN1	Produced non-financial assets (excluding natural resources)						0			0
K2 AN2	Non-produced non-financial assets (excluding natural resources)	- 3	0	0	0	0	- 3			- 3
K2 AN3	Natural resources	- 2		- 1			- 3			- 3
K2 AF	Financial assets and liabilities						0			0
K3	Catastrophic losses	- 5	0	- 6	0	0	- 11			- 11
K3 AN1	Produced non-financial assets (excluding natural resources)	- 5		- 4			- 9			- 9
K3 AN2	Non-produced non-financial assets (excluding natural resources)			- 2			- 2			- 2
K3 AN3	Natural resources						0			0
K3 AF	Financial assets and liabilities						0			0
K4	Uncompensated seizures	- 5	0	5	0	0	0			0
K4 AN1	Produced non-financial assets (excluding natural resources)	- 1		1			0			0
K4 AN2	Non-produced non-financial assets (excluding natural resources)	- 4		4			0			0
K4 AN3	Natural resources						0			0
K4 AF	Financial assets and liabilities						0			0
K5	Other changes in volume n.e.c.	1	1	0	0	0	2			2
K5 AN1	Produced non-financial assets (excluding natural resources)	1					1			1
K5 AN2	Non-produced non-financial assets (excluding natural resources)						0			0
K5 AN3	Natural resources						0			0
K5 AF	Financial assets and liabilities		1				1			1
K6	Changes in classification	6	- 2	- 4	0	0	0			0
K61	Changes in sector classification and structure	6	0	- 4	0	0	2			2
K61 AN1	Produced non-financial assets (excluding natural resources)	3		- 3			0			0
K61 AN2	Non-produced non-financial assets (excluding natural resources)	1		- 1			0			0
K61 AN3	Natural resources						0			0
K61 AF	Financial assets and liabilities	2					2			2
K62	Changes in classification of assets and liabilities	0	- 2	0	0	0	- 2			- 2
K62 AN1	Produced non-financial assets (excluding natural resources)		- 2				- 2			- 2
K62 AN2	Non-produced non-financial assets (excluding natural resources)	0	0	0			0			0
K62 AN3	Natural resources						0			0
K62 AF	Financial assets and liabilities	0	0	0			0			0
K1-K6	Total other changes in volume	18	- 1	1	0	0	18			18
K1-K6 AN1	Produced non-financial assets (excluding natural resources)	- 2	- 2	- 3	0	0	- 7			- 7
K1-K6 AN2	Non-produced non-financial assets (excluding natural resources)	- 2	0	1	0	0	- 1			- 1
K1-K6 AN3	Natural resources	20	0	3	0	0	23			23
K1-K6 AF	Financial assets and liabilities	2	1	0	0	0	3			3
K1-K6 AF1	Monetary gold and SDRs	0	0	0	0	0	0			0
K1-K6 AF2	Currency and deposits	0	0	0	0	0	0			0
K1-K6 AF3	Debt securities	0	0	0	0	0	0			0
K1-K6 AF4	Loans	0	0	0	0	0	0			0
K1-K6 AF5	Equity and investment fund shares/units	2	0	0	0	0	2			2
K1-K6 AF6	Insurance, pension and standardized guarantee schemes	0	1	0	0	0	1			1
K1-K6 AF7	Financial derivatives and employee stock options	0	0	0	0	0	0			0
K1-K6 AF8	Other accounts receivable/payable	0	0	0	0	0	0			0

Other changes in the volume of assets and liabilities account

Changes in liabilities and net worth

	Other flows	S11 Non-financial corporations	S12 Financial corporations	S13 General government	S14 Households	S15 NPISHs	S1 Total economy	S2 Rest of the world account	Goods and services account	Total
K1	Economic appearance of assets									0
K1 AN1	Produced non-financial assets (excluding natural resources)									0
K1 AN2	Non-produced non-financial assets (excluding natural resources)									0
K1 AN3	Natural resources									0
K1 AF	Financial assets and liabilities									0
K2	Economic disappearance of assets									0
K2 AN1	Produced non-financial assets (excluding natural resources)									0
K2 AN2	Non-produced non-financial assets (excluding natural resources)									0
K2 AN3	Natural resources									0
K2 AF	Financial assets and liabilities									0
K3	Catastrophic losses									0
K3 AN1	Produced non-financial assets (excluding natural resources)									0
K3 AN2	Non-produced non-financial assets (excluding natural resources)									0
K3 AN3	Natural resources									0
K3 AF	Financial assets and liabilities									0
K4	Uncompensated seizures									0
K4 AN1	Produced non-financial assets (excluding natural resources)									0
K4 AN2	Non-produced non-financial assets (excluding natural resources)									0
K4 AN3	Natural resources									0
K4 AF	Financial assets and liabilities									0
K5	Other changes in volume n.e.c.	0	0	0	1	0	1			1
K5 AN1	Produced non-financial assets (excluding natural resources)									0
K5 AN2	Non-produced non-financial assets (excluding natural resources)									0
K5 AN3	Natural resources									0
K5 AF	Financial assets and liabilities	0	0	0	1	0	1			1
K6	Changes in classification	0	0	2	0	0	2			2
K61	Changes in sector classification and structure	0	0	2	0	0	2			2
K61 AN1	Produced non-financial assets (excluding natural resources)									0
K61 AN2	Non-produced non-financial assets (excluding natural resources)									0
K61 AN3	Natural resources									0
K61 AF	Financial assets and liabilities	0	0	2	0	0	2			2
K62	Changes in classification of assets and liabilities	0	0	0	0	0	0			0
K62 AN1	Produced non-financial assets (excluding natural resources)									0
K62 AN2	Non-produced non-financial assets (excluding natural resources)									0
K62 AN3	Natural resources									0
K62 AF	Financial assets and liabilities	0	0	0	0	0	0			0
K1-K6	Total other changes in volume	0	0	2	1	0	3			3
K1-K6 AN1	Produced non-financial assets (excluding natural resources)									0
K1-K6 AN2	Non-produced non-financial assets (excluding natural resources)									0
K1-K6 AN3	Natural resources									0
K1-K6 AF	Financial assets and liabilities	0	0	2	1	0	3			3
K1-K6 AF1	Monetary gold and SDRs									0
K1-K6 AF2	Currency and deposits	0	0	0	0	0	0			0
K1-K6 AF3	Debt securities	0	0	0	0	0	0			0
K1-K6 AF4	Loans	0	0	0	0	0	0			0
K1-K6 AF5	Equity and investment fund shares/units	0	0	2	0	0	2			2
K1-K6 AF6	Insurance, pension and standardized guarantee schemes	0	0	0	1	0	1			1
K1-K6 AF7	Financial derivatives and employee stock options	0	0	0	0	0	0			0
K1-K6 AF8	Other accounts receivable/payable	0	0	0	0	0	0			0
B102	Changes in net worth due to other changes in the volume of assets and liabilities	18	- 1	- 1	- 1	0	15			15

Revaluation account
Changes in assets

		Other flows	S11 Non-financial corporations	S12 Financial corporations	S13 General government	S14 Households	S15 NPISHs	S1 Total economy	S2 Rest of the world account	Goods and services account	Total
Nominal holding gains and losses	K7 AN	Non-financial assets	144	4	44	80	8	280			280
	K7 AN1	Produced non-financial assets (excluding natural resources)	63	2	21	35	5	126			126
	K7 AN2	Non-produced non-financial assets (excluding natural resources)	1	1				2			2
	K7 AN3	Natural resources	80	1	23	45	3	152			152
	K7 AF	Financial assets and liabilities	8	57	1	16	2	84	7		91
	K7 AF1	Monetary gold and SDRs		11	1			12			12
	K7 AF2	Currency and deposits						0			0
	K7 AF3	Debt securities	3	30	0	6	1	40	4		44
	K7 AF4	Loans						0			0
	K7 AF5	Equity and investment fund shares/units	5	16	0	10	1	32	3		35
	K7 AF6	Insurance, pension and standardized guarantee schemes						0			0
	K7 AF7	Financial derivatives and employee stock options						0			0
	K7 AF8	Other accounts receivable/payable						0			0
Neutral holding gains and losses	K71 AN	Non-financial assets	101	3	32	56	6	198			198
	K71 AN1	Produced non-financial assets (excluding natural resources)	60	2	20	34	5	121			121
	K71 AN2	Non-produced non-financial assets (excluding natural resources)	1					1			1
	K71 AN3	Natural resources	40	1	12	22	1	76			76
	K71 AF	Financial assets and liabilities	18	71	8	36	3	136	12		148
	K71 AF1	Monetary gold and SDRs		14	2			16			16
	K71 AF2	Currency and deposits	8		3	17	2	30	2		32
	K71 AF3	Debt securities	2	18	0	4	1	25	3		28
	K71 AF4	Loans	1	24	3			28	1		29
	K71 AF5	Equity and investment fund shares/units	3	14		9		26	2		28
	K71 AF6	Insurance, pension and standardized guarantee schemes	1	1		5		7	1		8
	K71 AF7	Financial derivatives and employee stock options						0			0
	K71 AF8	Other accounts receivable/payable	3			1		4	3		7
Real holding gains and losses	K72 AN	Non-financial assets	43	1	12	24	2	82			82
	K72 AN1	Produced non-financial assets (excluding natural resources)	3	0	1	1	0	5			5
	K72 AN2	Non-produced non-financial assets (excluding natural resources)	0	1	0	0	0	1			1
	K72 AN3	Natural resources	40	0	11	23	2	76			76
	K72 AF	Financial assets and liabilities	- 10	- 14	- 7	- 20	- 1	- 52	- 5		- 57
	K72 AF1	Monetary gold and SDRs	0	- 3	- 1	0	0	- 4	0		- 4
	K72 AF2	Currency and deposits	- 8	0	- 3	- 17	- 2	- 30	- 2		- 32
	K72 AF3	Debt securities	1	12	0	2	0	15	1		16
	K72 AF4	Loans	- 1	- 24	- 3	0	0	- 28	- 1		- 29
	K72 AF5	Equity and investment fund shares/units	2	2	0	1	1	6	1		7
	K72 AF6	Insurance, pension and standardized guarantee schemes	- 1	- 1	0	- 5	0	- 7	- 1		- 8
	K72 AF7	Financial derivatives and employee stock options	0	0	0	0	0	0			0
	K72 AF8	Other accounts receivable/payable	- 3	0	0	- 1	0	- 4	- 3		- 7

Revaluation account

Changes in liabilities and net worth

		Other flows	S11 Non-financial corporations	S12 Financial corporations	S13 General government	S14 Households	S15 NPISHs	S1 Total economy	S2 Rest of the world account	Goods and services account	Total
Nominal holding gains and losses	K7 AN	Non-financial assets	0	0	0	0	0	0			0
	K7 AN1	Produced non-financial assets (excluding natural resources)						0			0
	K7 AN2	Non-produced non-financial assets (excluding natural resources)						0			0
	K7 AN3	Natural resources						0			0
	K7 AF	Financial assets and liabilities	18	51	7	0	0	76	15		91
	K7 AF1	Monetary gold and SDRs						0	12		12
	K7 AF2	Currency and deposits						0			0
	K7 AF3	Debt securities	1	34	7		0	42	2		44
	K7 AF4	Loans						0			0
	K7 AF5	Equity and investment fund shares/units	17	17				34	1		35
	K7 AF6	Insurance, pension and standardized guarantee schemes						0			0
	K7 AF7	Financial derivatives and employee stock options						0			0
	K7 AF8	Other accounts receivable/payable						0			0
	B103	*Changes in net worth due to nominal holding gains/losses*	134	10	38	96	10	288	- 8		280
Neutral holding gains	K71 AN	Non-financial assets	0	0	0	0	0	0			0
	K71 AN1	Produced non-financial assets (excluding natural resources)						0			0
	K71 AN2	Non-produced non-financial assets (excluding natural resources)						0			0
	K71 AN3	Natural resources						0			0
	K71 AF	Financial assets and liabilities	37	68	13	5	3	126	22		148
	K71 AF1	Monetary gold and SDRs							16		16
	K71 AF2	Currency and deposits	1	26	2		1	30	2		32
	K71 AF3	Debt securities	1	21	4		0	26	2		28
	K71 AF4	Loans	18		7	3	1	29			29
	K71 AF5	Equity and investment fund shares/units	14	14				28			28
	K71 AF6	Insurance, pension and standardized guarantee schemes		7				7	1		8
	K71 AF7	Financial derivatives and employee stock options									0
	K71 AF8	Other accounts receivable/payable	3			2	1	6	1		7
	B1031	*Changes in net worth due to neutral holding gains/losses*	82	6	27	87	6	208	- 10		198
Real holding gains and losses	K72 AN	Non-financial assets	0	0	0	0	0	0			0
	K72 AN1	Produced non-financial assets (excluding natural resources)						0			0
	K72 AN2	Non-produced non-financial assets (excluding natural resources)						0			0
	K72 AN3	Natural resources						0			0
	K72 AF	Financial assets and liabilities	- 19	- 17	- 6	- 5	- 3	- 50	- 7		- 57
	K72 AF1	Monetary gold and SDRs	0	0	0	0	0	0	- 4		- 4
	K72 AF2	Currency and deposits	- 1	- 26	- 2	0	- 1	- 30	- 2		- 32
	K72 AF3	Debt securities	0	13	3	0	0	16	0		16
	K72 AF4	Loans	- 18	0	- 7	- 3	- 1	- 29	0		- 29
	K72 AF5	Equity and investment fund shares/units	3	3	0	0	0	6	1		7
	K72 AF6	Insurance, pension and standardized guarantee schemes	0	- 7	0	0	0	- 7	- 1		- 8
	K72 AF7	Financial derivatives and employee stock options	0	0	0	0	0	0	0		0
	K72 AF8	Other accounts receivable/payable	- 3	0	0	- 2	- 1	- 6	- 1		- 7
	B1032	*Changes in net worth due to real holding gains/losses*	52	4	11	9	4	80	2		82

Opening balance sheet, changes in assets and liabilities, and closing balance sheet
Assets

		Stocks and changes in assets	S11 Non-financial corporations	S12 Financial corporations	S13 General government	S14 Households	S15 NPISHs	S1 Total economy	S2 Rest of the world account	Goods and services account	Total
Opening balance sheet	*AN*	Non-financial assets	2 152	93	1 089	1 431	159	4 924			4 924
	AN1	Produced non-financial assets (excluding natural resources)	1 214	67	497	816	124	2 718			2 718
	AN11	Fixed assets (excluding produced natural resources)	1 166	52	467	673	121	2 479			2 479
	AN12	Inventories (excluding produced natural resources)	43	0	22	48	1	114			114
	AN13	Valuables	5	15	8	95	2	125			125
	AN2	Non-produced non-financial assets (excluding natural resources)	14	3	6	2	0	25			25
	AN21	Contracts, leases and licenses	13	3	6	0	0	22			22
	AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange	1	0	0	2	0	3			3
	AN23	Purchased goodwill and marketing assets						0			0
	AN3	Natural resources	924	23	586	613	35	2 181			2 181
	AN31	Land						0			0
	AN32	Mineral and energy reserves						0			0
	AN33	Biological resources						0			0
	AN34	Water resources						0			0
	AN39	Other natural resources						0			0
	AF	Financial assets/liabilities	982	3 421	396	3 260	172	8 231	805		9 036
	AF1	Monetary gold and SDRs		690	80			770			770
	AF2	Currency and deposits	382		150	840	110	1 482	105		1 587
	AF3	Debt securities	90	950	0	198	25	1 263	125		1 388
	AF4	Loans	50	1 187	115	24	8	1 384	70		1 454
	AF5	Equity and investment fund shares/units	280	551	12	1 749	22	2 614	345		2 959
	AF6	Insurance, pension and standardized guarantee schemes	25	30	20	391	4	470	26		496
	AF7	Financial derivatives and employee stock options	5	13	0	3	0	21	0		21
	AF8	Other accounts receivable/payable	150	0	19	55	3	227	134		361
Total changes in assets	*AN*	Non-financial assets	292	- 2	40	116	11	457			457
	AN1	Produced non-financial assets (excluding natural resources)	202	- 4	29	65	7	299			299
	AN11	Fixed assets (excluding produced natural resources)	174	- 2	23	52	7	254			254
	AN12	Inventories (excluding produced natural resources)	25	0	1	3	0	29			29
	AN13	Valuables	3	- 2	5	10	0	16			16
	AN2	Non-produced non-financial assets (excluding natural resources)	- 2	1	1	1	0	1			1
	AN21	Contracts, leases and licenses	- 2	1	1	1	0	1			1
	AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange	0	0	0	0	0	0			0
	AN23	Purchased goodwill and marketing assets	0	0	0	0	0	0			0
	AN3	Natural resources	92	1	10	50	4	157			157
	AN31	Land									
	AN32	Mineral and energy reserves									
	AN33	Biological resources									
	AN34	Water resources									
	AN39	Other natural resources									
	AF	Financial assets/liabilities	70	228	17	205	4	524	55		579
	AF1	Monetary gold and SDRs	0	10	1	0	0	11	1		12
	AF2	Currency and deposits	16	8	0	64	2	90	11		101
	AF3	Debt securities	10	96	4	16	0	126	14		140
	AF4	Loans	19	53	3	3	0	78	4		82
	AF5	Equity and investment fund shares/units	17	44	3	76	1	141	15		156
	AF6	Insurance, pension and standardized guarantee schemes	1	8	1	39	0	49	0		49
	AF7	Financial derivatives and employee stock options	3	8	0	3	0	14	0		14
	AF8	Other accounts receivable/payable	4	1	5	4	1	15	10		25
Closing balance sheet	*AN*	Non-financial assets	2 444	91	1 129	1 547	170	5 381			5 381
	AN1	Produced non-financial assets (excluding natural resources)	1 416	63	526	881	131	3 017			3 017
	AN11	Fixed assets (excluding produced natural resources)	1 340	50	490	725	128	2 733			2 733
	AN12	Inventories (excluding produced natural resources)	68	0	23	51	1	143			143
	AN13	Valuables	8	13	13	105	2	141			141
	AN2	Non-produced non-financial assets (excluding natural resources)	12	4	7	3	0	26			26
	AN21	Contracts, leases and licenses	11	4	7	1	0	23			23
	AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange	1	0	0	2	0	3			3
	AN23	Purchased goodwill and marketing assets	0	0	0	0	0	0			0
	AN3	Natural resources	1 016	24	596	663	39	2 338			2 338
	AN31	Land									
	AN32	Mineral and energy reserves									
	AN33	Biological resources									
	AN34	Water resources									
	AN39	Other natural resources									
	AF	Financial assets/liabilities	1 052	3 649	413	3 465	176	8 755	860		9 615
	AF1	Monetary gold and SDRs	0	700	81	0	0	781	1		782
	AF2	Currency and deposits	398	8	150	904	112	1 572	116		1 688
	AF3	Debt securities	100	1 046	4	214	25	1 389	139		1 528
	AF4	Loans	69	1 240	118	27	8	1 462	74		1 536
	AF5	Equity and investment fund shares/units	297	595	15	1 825	23	2 755	360		3 115
	AF6	Insurance, pension and standardized guarantee schemes	26	38	21	430	4	519	26		545
	AF7	Financial derivatives and employee stock options	8	21	0	6	0	35	0		35
	AF8	Other accounts receivable/payable	154	1	24	59	4	242	144		386

Opening balance sheet, changes in assets and liabilities, and closing balance sheet

Liabilities and net worth

		Stocks and changes in liabilities	S11 Non-financial corporations	S12 Financial corporations	S13 General government	S14 Households	S15 NPISHs	S1 Total economy	S2 Rest of the world account	Goods and services account	Total
Opening balance sheet	*AN*	Non-financial assets									
	AN1	Produced non-financial assets (excluding natural resources)									
	AN11	Fixed assets (excluding produced natural resources)									
	AN12	Inventories (excluding produced natural resources)									
	AN13	Valuables									
	AN2	Non-produced non-financial assets (excluding natural resources)									
	AN21	Contracts, leases and licenses									
	AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange									
	AN23	Purchased goodwill and marketing assets									
	AN3	Natural resources									
	AN31	Land									
	AN32	Mineral and energy reserves									
	AN33	Biological resources									
	AN34	Water resources									
	AN39	Other natural resources									
	AF	Financial assets/liabilities	3 221	3 544	687	189	121	7 762	1 274		9 036
	AF1	Monetary gold and SDRs						0	770		770
	AF2	Currency and deposits	40	1 281	102	10	38	1 471	116		1 587
	AF3	Debt securities	44	1 053	212	2		1 311	77		1 388
	AF4	Loans	897		328	169	43	1 437	17		1 454
	AF5	Equity and investment fund shares/units	1 987	765	4			2 756	203		2 959
	AF6	Insurance, pension and standardized guarantee schemes	12	435	19		5	471	25		496
	AF7	Financial derivatives and employee stock options	4	10				14	7		21
	AF8	Other accounts receivable/payable	237		22	8	35	302	59		361
	B90	*Net worth*	- 87	- 30	798	4 502	210	5 393	- 469		4 924
Total changes in liabilities and net worth	*AN*	Non-financial assets									
	AN1	Produced non-financial assets (excluding natural resources)									
	AN11	Fixed assets (excluding produced natural resources)									
	AN12	Inventories (excluding produced natural resources)									
	AN13	Valuables									
	AN2	Non-produced non-financial assets (excluding natural resources)									
	AN21	Contracts, leases and licenses									
	AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange									
	AN23	Purchased goodwill and marketing assets									
	AN3	Natural resources									
	AN31	Land									
	AN32	Mineral and energy reserves									
	AN33	Biological resources									
	AN34	Water resources									
	AN39	Other natural resources									
	AF	Financial assets/liabilities	158	224	102	16	6	506	73		579
	AF1	Monetary gold and SDRs	0	0	0	0	0	0	12		12
	AF2	Currency and deposits	0	65	37	0	0	102	- 1		101
	AF3	Debt securities	8	64	45	0	0	117	23		140
	AF4	Loans	21	0	9	11	6	47	35		82
	AF5	Equity and investment fund shares/units	100	39	2	0	0	141	15		156
	AF6	Insurance, pension and standardized guarantee schemes	0	48	0	1	0	49	0		49
	AF7	Financial derivatives and employee stock options	3	8	0	0	0	11	3		14
	AF8	Other accounts receivable/payable	26	0	9	4	0	39	- 14		25
	B10	*Changes in net worth, total*	204	2	- 45	305	9	475	- 18		457
	B101	*Saving and capital transfers*	52	- 7	- 82	210	- 1	172	- 10		162
	B102	*Other changes in volume of assets*	18	- 1	- 1	- 1	0	15	0		15
	B103	*Nominal holding gains/losses*	134	10	38	96	10	288	- 8		280
	B1031	Neutral holding gains/losses	82	6	27	87	6	208	- 10		198
	B1032	Real holding gains/losses	52	4	11	9	4	80	2		82
Closing balance sheet	*AN*	Non-financial assets									
	AN1	Produced non-financial assets (excluding natural resources)									
	AN11	Fixed assets (excluding produced natural resources)									
	AN12	Inventories (excluding produced natural resources)									
	AN13	Valuables									
	AN2	Non-produced non-financial assets (excluding natural resources)									
	AN21	Contracts, leases and licenses									
	AN22	Crypto assets without a corresponding liability designed to act as a medium of exchange									
	AN23	Purchased goodwill and marketing assets									
	AN3	Natural resources									
	AN31	Land									
	AN32	Mineral and energy reserves									
	AN33	Biological resources									
	AN34	Water resources									
	AN39	Other natural resources									
	AF	Financial assets/liabilities	3 379	3 768	789	205	127	8 268	1 347		9 615
	AF1	Monetary gold and SDRs	0	0	0	0	0	0	782		782
	AF2	Currency and deposits	40	1 346	139	10	38	1 573	115		1 688
	AF3	Debt securities	52	1 117	257	2	0	1 428	100		1 528
	AF4	Loans	918	0	337	180	49	1 484	52		1 536
	AF5	Equity and investment fund shares/units	2 087	804	6	0	0	2 897	218		3 115
	AF6	Insurance, pension and standardized guarantee schemes	12	483	19	1	5	520	25		545
	AF7	Financial derivatives and employee stock options	7	18	0	0	0	25	10		35
	AF8	Other accounts receivable/payable	263	0	31	12	35	341	45		386
	B90	*Net worth*	117	- 28	753	4 807	219	5 868	- 487		5 381

Annex 4: Changes from the 2008 System of National Accounts

A. Introduction

A4.1 The *System of National Accounts 2025* (2025 SNA) retains the basic theoretical framework of its predecessor, the *System of National Accounts 2008* (2008 SNA). However, in line with the mandate of the United Nations Statistical Commission, the 2025 SNA introduces treatments for new aspects of the economy that have come into prominence, elaborates on aspects that have increasingly become the focus of analytical attention and clarifies guidance on a wide range of issues. The changes in the 2025 SNA bring the accounts into line with developments in the economic environment, advances in methodological research and needs of users.

A4.2 The following distinction is applied consistently throughout the 2025 SNA:

- *Sequence of economic accounts*, which consists of the sequence of interconnected flow accounts linked to the different types of economic activity taking place within a given period of time, together with balance sheets that record the values of the stocks of assets and liabilities at the beginning and end of the period, compiled by institutional sector.
- *Integrated framework of national accounts*, which consists of the sequence of economic accounts, supply and use tables, labour market tables and the table on capital services.
- *System of National Accounts (SNA*), which refers to the whole set of standards, including extended/thematic accounts and supplementary items.

A4.3 Section B provides an overview of the key changes in the 2025 SNA, including their impact on the main national accounting aggregates.

A4.4 In sections C through L, the changes in the 2025 SNA are grouped together in ten sections:

- Section C: Generic issues;
- Section D: Further specifications of statistical units and revisions in institutional sectoring;
- Section E: Further specifications of the scope of transactions, including the production boundary;
- Section F: Extensions and further specifications of the concepts of non-financial assets, capital formation and depreciation/depletion, including changes related to other transactions in goods and services;
- Section G: Further refinement of the treatment and definition of financial corporations, financial instruments and financial assets;
- Section H: Further specifications of the scope of transactions concerning the government and the public sector;
- Section I; Broadening the framework of the national accounts to address well-being and sustainability;
- Section J: Other enhancements to the content of the SNA;
- Section K: Changes relating to communicating and disseminating macroeconomic statistics, including changes in terminology; and
- Section L: Changes in the structure of the SNA.

A4.5 The descriptions given only highlight the main differences between the 2008 SNA and the 2025 SNA while refraining from exhaustive descriptions. The discussion of the changes in Sections C to K includes cross-references to the corresponding paragraphs in the chapters.

B. Summary of key changes

1. Conceptual changes

A4.6 The conceptual changes in the 2025 SNA that impact the measurement of the main aggregates – that is, GDP/NDP, national income, national saving, net lending/borrowing and net worth – are as follows:

- The information content of electronic data collected and used in production is included in the asset boundary of the integrated framework of the SNA, as a new asset category – data – under (produced) fixed assets (see section F.1 below). This change impacts the measurement of GDP/NDP, national income, national saving and net worth, but has no impact on net lending/borrowing.
- Depletion is treated as a cost of production, alongside depreciation, in the calculation of NDP and other net measures (see section F.4 below). This change impacts the measurement of NDP, net national income and net saving, but has no impact on net lending/borrowing or net worth.
- A net return to capital used in production is included in the value of output for non-market producers such as governments (see section E.3 below). This change impacts the measurement of GDP/NDP, national income, and, in the case of own-account capital formation, national saving and net worth, but not the measurement of net lending/borrowing (at either the national or sectoral level).
- All central bank output is now considered as non-market and consumed by the central bank. Payments by financial corporations related to regulatory services are now treated as current transfers and not as payments for services (see section E.4 below). This change increases the value added of financial corporations and accordingly impacts the measurement of GDP/NDP and national income, but has no impact on national saving, net lending/borrowing or net worth.
- Renewable energy resources are recognised as assets (if not already reflected in the value of land) (see F.5 below). This change impacts on the measurement of net worth, but no other key aggregate.

A4.7 Furthermore, a "split asset" asset approach is adopted for natural resource assets where economic benefits are shared between the legal owner of the asset and the extractor (see section F.5 below). This change does not impact the measurement of any key aggregate at the national level, but changes the allocation of relevant assets across sectors.

2. New standard breakdowns

A4.8 The changes in the 2025 SNA that result in new standard breakdowns are as follows:

- Standard breakdowns are included for (adjusted) disposable income, final consumption, saving and wealth by income and wealth decile group (see section D.1 below).
- A broader set of standard tables for labour input is provided in the form of labour market tables (see section I below).
- Breakdowns for the corporations sectors by foreign-controlled corporations, public corporations and national private corporations, are introduced as standard breakdowns (see section D.1 below). The 2025 SNA also recommends distinguishing as standard items national private corporations and public corporations that are part of domestic multinational enterprise (MNE) groups (see section D.1 below).
- The 2025 SNA includes a breakdown of financial derivatives by market risk as a standard breakdown (see section G.9 below).
- The integrated framework for national accounts in the 2025 SNA includes a standard table showing the implicit capital services provided by non-financial assets (see section F.9 below).

3. New guidance

A4.9 The 2025 SNA provides new guidance in many areas. Of note is guidance provided on the treatment of crypto assets and non-fungible tokens. Crypto assets without a corresponding liability designed to act as a general medium of exchange, such as bitcoin, are treated as non-produced non-financial assets, classified as a separate standard category (see section F.2 below). Crypto assets with a corresponding liability are treated as financial instruments (see section G.1 below).

C. Generic issues

1. Giving more prominence to net measures

Reference: chapter 1, paragraphs 1.39 to 1.40; chapter 21, paragraphs 21.104 to 21.107

A4.10 Net income measures have been given more emphasis in the 2025 SNA. In this respect, the volume change of net domestic product (NDP) has been identified as the conceptually preferred measure of economic growth, not replacing but to be used alongside the volume change of gross domestic product (GDP). In the 2025 SNA, NDP is defined as GDP less depreciation and depletion of natural resources (in the 2025 SNA the term "depreciation" has replaced the term "consumption of fixed capital" used in the 2008 SNA; see table A4.2 below). See also section F.4 below for a discussion of the changed treatment of depletion in the 2025 SNA.

2. Valuation principles and methodologies

Reference: chapter 4, paragraphs 4.132 to 4.134, paragraph 4.155, and Annex; chapter 28, section G; chapter 30, section F; chapter 34, section D3; chapter 35, section D

A4.11 The principles and methodologies for valuing transactions and stocks/positions has not been changed in the 2025 SNA. However, more explicit guidance regarding the following issues has been added:

a) Using the preferred term "exchange values", defined as "the values at which goods, services, labour or assets are in fact exchanged (between two independent parties) or else could be exchanged for cash", as the main principle for valuing transactions. The concept of "exchange values" and "exchange price" have been more clearly distinguished from the valuation methods to approximate this concept, by referring to observed exchange prices/market prices as the preferable method for valuing transactions;

b) Using the notion of (the present value of future) capital services as the current operational value for valuing non-financial assets. This can be approximated by using the perpetual inventory method (PIM) for most fixed assets and the present value of future resource rents for non-produced natural resources. In particular, there are more detailed recommendations for valuing mineral and energy resources. See also section F.5 below for a further discussion on accounting for mineral and energy resources;

c) Only using observed market prices to arrive at market-equivalent prices, if the appropriate market conditions are met. The latter concerns issues related to the maturity of the markets and/or related to the point that the market is not distorted by, for example, government interventions. It is not related to the structure of the market (competitive, monopolistic, oligopolistic, monopsonistic or other types of markets);

d) Including further precisions in applying the sum of costs method on the estimation of labour input provided by owners and family members of unincorporated enterprises; the extent of capital services to be included; the rate to use in estimating the net return to capital used in production; and the inclusion of rent payable on the use of (rented) capital used in production. See also section E.3 below for a discussion of further changes made in the use of the sum of cost method;

e) Elaborating the concept of nominal value and including clarifications on the measurement of nominal values for zero-coupon or deep-discounted securities and other debt instruments that do not accrue interest;

f) More details on alternative valuation methodologies for transactions and positions beyond the integrated framework. This particularly concerns unpaid household services and human capital. See also section I below for a further discussion of issues related to unpaid household services and human capital;

g) More details on the relationship between the SNA and business and public sector accounting standards, with reference specifically to valuation of transactions and stocks/positions.

3. Islamic finance

Reference: chapter 26

A4.12 The 2025 SNA provides, in chapter 26, a concise description of the main Islamic financial instruments, the main economic agents active in Islamic finance and the application of the concept of economic ownership in Islamic finance. For the impact on the definition of interest, see section E.6 below.

4. Informal economy

Reference: chapter 39

A4.13 Chapter 39 on the informal economy improves the alignment with the latest resolutions on the informal economy endorsed by the International Conference of Labour Statisticians (ICLS).

5. Relationship between national accounts and standards for business and public sector accounting

Reference: chapter 28, section G; chapter 30, section F

A4.14 Information on the relationships between the SNA sequence of economic accounts and the standards for business and public sector accounting has been included in 2025 SNA, in chapter 28 on Non-financial corporations and chapter 30 on General government and the public sector, respectively.

D. Further specifications of statistical units and revisions in institutional sectoring

1. More granular information on households and corporations

Reference: chapter 5, paragraphs 5.38 to 5.39; chapter 23, paragraph 23.37 and paragraph 23.83

A4.15 The 2025 SNA places more emphasis on issues related to (material) well-being. In this regard, distributional information on household income, consumption, saving and wealth is considered highly relevant (see also section I below). Therefore, the 2025 SNA includes standard breakdowns for (adjusted) disposable income, consumption, saving and wealth by income and wealth decile groups and, if possible, results for the top 5 per cent and the top 1 per cent. Alternative breakdowns by main source of income, by household type, by housing status and by age of the reference person are also recommended, as supplementary items.

A4.16 To improve accounting for the impact of globalization on the measurement of economic activity, the standard breakdowns for the corporations sectors, namely foreign-controlled corporations, public corporations and national private corporations, are introduced as standard breakdowns. The 2025 SNA also recommends distinguishing national private corporations and public corporations that are part of domestic multinational enterprise groups as standard items. These breakdowns should also be included, if relevant, in the extended supply and use tables, as supplementary breakdowns (see section J.4 below).

A4.17 The definition of control has been aligned between the SNA and the *BPM7* and is defined as the "ability to determine general corporate policy of a corporation". In the case of private control, "control is determined through (a) an immediate direct investment relationship where the direct investor owns more than 50 per cent of the voting power in the direct investment enterprise; and (b) an indirect direct investment relationship arising from the ownership of voting power in one direct investment enterprise that owns voting power in another enterprise(s) – indirectly through a chain of control". In the case of public control, the traditional list of eight indicators, as included in paragraph 4.80 of the 2008 SNA, continue to be used as the most important and likely factors to consider.

A4.18 For countries where the presence of special purpose entities is significant, a separate identification of such entities, as an "of which" item, is recommended in the 2025 SNA as supplementary information. For changes regarding the treatment of special purpose entities, see section D.3 below. Further breakdowns of sectors, for activities related to financial technology (fintech), are recommended as supplementary items for countries where these activities are significant. For more granular information on the financial corporations' sector, see also section D.4 below.

2. Statistical units

Reference: chapter 6, paragraphs 6.35 to 6.36

A4.19 In the 2025 SNA, more guidance is provided on the usefulness and practicalities of applying the concepts of enterprises and establishments in the relevant parts of the integrated framework of national accounts. The issue of the appropriate statistical unit for compiling national accounts has been added to the SNA research agenda (see annex 5).

3. Treatment of certain groups of economic agents

Reference: chapter 5, paragraphs 5.80 to 5.82, paragraphs 5.97 to 5.105, paragraph 5.152, paragraphs 5.161 to 5.162, paragraph 5.164 and paragraph 5.247; chapter 24, paragraph 24.96

A4.20 In the 2025 SNA, the term "special purpose entities" is reserved for units with non-resident parents. While such units with resident parents usually have no autonomy of decision, and are therefore consolidated with their parents, some of these units may actually have autonomy of decision and in these cases should be treated as separate institutional units. However, the latter institutional units incorporated in the same economic territory as their parents should not to be referred to as special purpose entities, but instead by their specific type of activity (e.g. domestic securitization vehicle).

A4.21 In the 2025 SNA guidance has been provided on the definition and treatment of trusts and similar asset pools under third-party management. The institutional unit test of trusts, investment funds and pension schemes, and their related classification has been clarified.

A4.22 The 2025 SNA provides guidance on the treatment of asset management services provided by deposit-taking corporations. The treatment depends on who runs the risks and rewards of the invested funds: the deposit-taking corporation or the investor; and for the latter case, it depends on whether the funds are invested on behalf of a single investor or multiple investors.

A4.23 In the case of multi-employer pension schemes, the 2025 SNA clarifies that such schemes may also constitute separate institutional units where it is not possible to allocate the responsibility for any shortfall or surplus to a single employer.

A4.24 The 2025 SNA clarifies that investment funds should be classified in the non-financial corporations' sector if they primarily own, and directly rent out, dwellings and/or commercial property and, consequently, limit their primary activity to the production of non-financial services. (The classification of real estate investment funds has been added to the SNA research agenda; see annex 5.) Investment funds that directly invest in other non-financial assets, such as crypto assets, gold and other valuable metals, or high-end wines and whiskies, are classified as non-MMF investment funds, because the main part of their returns on the invested assets will relate to holding gains, and does not consist of the production of non-financial services.

A4.25 The 2025 SNA further clarifies the determination of the institutional independence of holding companies and head offices; the distinction between holding companies and head offices versus other types of units; and the distinction between holding companies and head offices.

A4.26 The 2025 SNA provides guidance, in regard to centralized currency unions, on the treatment of national agencies, including the notional resident units, as residents of the economies of their location, to ensure that in each economy monetary activities with residents of the currency union are carried out by national agencies (which resemble in their operations a national central bank) having their own assets and liabilities.

A4.27 The 2025 SNA clarifies the residence and the recording of transactions of offshore banks, by treating offshore banks as residents of the country where they are incorporated or registered. They should be classified as deposit-taking corporations except the central bank subsector.

4. Non-bank financial intermediation

Reference: chapter 29, section D2 and section D3

A4.28 To arrive at an improved picture of financial risks and vulnerabilities, the 2025 SNA recommends more detailed breakdowns of the financial corporations' sector and additional granularity for specific financial instruments. Guidance has also been provided on how to delineate additional subsectors and instruments, as supplementary items, where their separate identification is relevant.

E. Further specifications of the scope of transactions, including the production boundary

1. Clarifications in relation to the recording of digital activities

Reference: chapter 7, paragraph 7.163; chapter 11, paragraphs 11.100 to 11.101; chapter 22, paragraphs 22.12 to 22.20, paragraphs 22.43 to 22.46 and paragraph 22.48

A4.29 A relatively new phenomenon concerns cloud computing, which has not led to any conceptual changes to the integrated framework of national accounts. However, further clarification is provided in the 2025 SNA on the treatment of software licences, including the distinction between intermediate consumption and gross fixed capital formation; long-term access to servers and other resources; own-account production of information technology (IT) equipment; and cross-border flows. The 2025 SNA treats payments for software subscriptions as purchases of a service, unless long-term licences for software hosted in cloud computing data centres are more likely to represent software assets of the user. Furthermore, clarification is provided on the recording of gross fixed capital formation of data centres, including IT equipment, for own final use. As major suppliers of cloud computing have globe-spanning networks of computing facilities and clients, guidance is included on the measurement of the international transactions in cloud computing services across these networks.

A4.30 The 2025 SNA also clarifies the definition of digital intermediation platforms and the recording of the fees charged for their intermediary role based on the producer approach, i.e., the output of the platform is equal to the value of the fees, and not the full value of the service intermediated.

2. Treatment of global production arrangements

Reference: chapter 23, section B

A4.31 In the 2025 SNA, further guidance is provided on the recording of global production arrangements, in line with the *UNECE Guide to measuring global production*. Guidance is also provided for the recording of inverse merchanting, which concerns, for example, a merchanting enterprise resident in country A that is buying goods in country B and is selling the goods without physical transformation to another economic agent in country B.

3. A more consistent application of the sum of costs method

Reference: chapter 4, paragraphs 4A.6 to 4A.9

A4.32 In relation to the application of the sum of costs approach, the 2025 SNA: (a) includes a net return to capital used in production in all cases, including for the valuation of output of non-market producers (in

the 2008 SNA, a net return to capital was excluded for non-market producers as a convention); (b) expands the scope of assets for which a net return to capital should be recognized, thus including work-in-progress, other inventories (where significant) and non-produced non-financial assets that are used in production (in the 2008 SNA, none of these assets were included); however, city parks and historical monuments are excluded on pragmatic grounds; (c) in line with the revised treatment of depletion in the 2025 SNA, adds, where relevant, depletion of natural resources as a cost element (this does not concern depletion attributed to government as a legal owner of natural resources), and (d) adds, where relevant, payments of rent on (rented) non-produced non-financial assets used in production as a cost element (rent was not included as a cost in the 2008 SNA).

4. Changes and recommendations in relation to the measurement of specific services

Reference: chapter 7, paragraph 7.169, paragraphs 7.179 to 7.189 and paragraph 7.195; chapter 10, paragraphs 10.107 to 10.108

A4.33 For conceptual reasons, the 2025 SNA has removed the references to financial intermediation services indirectly measured (FISIM) in the estimation of central bank output. (In the 2025 SNA, the term "FISIM" has been replaced by "implicit financial services on loans and deposits"; see table A4.2 below.) The recommendations on the typical services provided by central banks have been updated to recognize other services, for instance those related to promoting financial stability and monitoring the payments system. The 2025 SNA treats all services provided by central banks as collective services, valued using the sum of costs method. Any transfers in relation to these services from the financial corporations sector to the central bank are recorded as current transfers (instead of sales/purchases of services as recorded in the 2008 SNA), and the collective services produced by the central bank are allocated to the final consumption expenditure of the central bank (instead of being imputed to government as in the 2008 SNA).

A4.34 The 2025 SNA recommends to (implicitly) include maturity risk in the measurement of implicit financial services on loans and deposits, by using a single reference rate for domestic loans and deposits. The 2025 SNA provides recommendations on the choice of reference rate (a single exogenous rate, a weighted basket of exogenous rates, or an endogenous interest rate), including guidance on reviewing the applicability of the reference rate in very volatile periods. For the calculation of imports and exports of implicit financial services on loans and deposits, the 2025 SNA recommends distinguishing reference rates for different categories of currencies and, if applicable, at least two groups of currencies.

A4.35 The 2025 SNA clarifies that implicit financial services on loans and deposits may also be charged to investment funds. These implicit service charges should be recorded as being paid by the shareholders of the funds to the deposit-taking corporations, similar to the treatment of explicit service charges paid to the investment funds (see section E.7 below).

A4.36 The 2025 SNA provides guidance on the recording of factoring transactions, which was absent in the 2008 SNA. This relates to the measurement of output, which is set equal to the factoring income (i.e., the difference between the nominal value of the underlying trade credits and the actual advances made by the factor), recognizing that this method may not work in special circumstances of very high inflation and credit risk environments. Implicit financial services on loans and deposits in the measurement of factoring output are not included, for conceptual reasons. Indirect financing by the factor to the debtor is classified as a loan.

5. Household production of electricity and heat

Reference: chapter 7, paragraphs 7.154 to 7.155

A4.37 The 2025 SNA provides guidance on the recording of production, by households, of electricity through the use of solar panels and wind power plants and the production of heat through geothermal heat or heat pumps is to be treated as own-account production of goods. Household production of electricity can be used directly by the producing household for own final consumption, can be sold to the local grid, or a mix of the two (with complicated price structures involved). Household production of heat through geothermal heat or heat pumps is normally used for own final consumption. The production of electricity

and heat by households for own final consumption is also considered to be part of the production boundary applied in the integrated framework of national accounts.

6. Recording and measuring interest

Reference: chapter 8, paragraph 8.119 and paragraph 8.124; chapter 14, paragraphs 14.112 to 14.113

A4.38 The 2025 SNA treats negative receipts of interest as negative investment income, and not as positive expenditures of interest. The 2008 SNA provided no guidance on this point.

A4.39 The 2025 SNA only records a transfer element for concessional lending in the sequence of economic accounts in the case of concessional loans provided by employers to employees. In these cases, the interest rate is adjusted to market interest rates, with a concomitant increase of remuneration of employees. (In the 2025 SNA, the term "remuneration of employees" has replaced the term "compensation of employees" used in the 2008 SNA; see table A4.2 below.) The special cases of interest rates set by central banks (see paragraphs 7.122 to 7.126 of the 2008 SNA) have been removed, for conceptual reasons. The 2025 SNA recommends compiling, as supplementary items, information on concessional lending by government and international organizations, where the implicit transfer in the provision of loans at lower interest rates is to be recorded as capital transfers at inception, because it typically concerns an explicit policy decision to provide a lower interest rate at the start of the loan.

A4.40 To accommodate certain arrangements that are common to Islamic finance, the term "interest" in the sequence of economic accounts has been changed in the 2025 SNA to "interest and similar returns"; the definition has also been slightly changed.

7. Treatment and recording of dividends and retained earnings

Reference: chapter 7, paragraph 7.179; chapter 8, paragraphs 8.137 to 8.139 and paragraph 8.147

A4.41 In relation to the recording of distributed income of foreign direct investment (FDI) enterprises, the 2025 SNA only records exceptional payments of distributable income to the parent company as withdrawal of equity, if they relate to the sale of financial or non-financial assets (other than cash). Distributions of income from accumulated reserves for previous periods' earnings are recorded as dividends (in the 2008 SNA such distributions were recorded as withdrawals of equity). This is different from the treatment of exceptional payments of dividends by domestically owned corporations (including payments by public corporations to government), for which the distribution of income out of accumulated reserves continues to be recorded as withdrawals of equity. These so-called "super dividends" are defined as large and irregular payments or payments that are funded from accumulated reserves or sales of assets and typically measured as the difference between the actual payments and the distributable income. In the case of FDI, all distributable income is recorded as part of investment income, either as dividends or as reinvested earnings on foreign direct investment, so the change has no impact on the income measure. To facilitate comparisons between FDI-related dividends and other dividends, compilers are advised, if feasible and relevant, to break down FDI-related dividends into payments as defined for non-FDI corporations and other dividends.

A4.42 The 2025 SNA clarifies that all payments for services paid by investment funds on behalf of the shareholders, including implicit financial services on loans and deposits mentioned in section E.4 above, are rerouted to the shareholders, which requires the introduction of imputed dividends payable by the investment fund to the shareholders equal to the amount of such expenses.

A4.43 The 2025 SNA recommends that retained earnings estimates be compiled for equity in all corporations, in line with the treatment of FDI, as supplementary items.

8. Delineation and recording of rent

Reference: chapter 8, paragraph 8.164 and paragraph 8.174; chapter 22, paragraph 22.29

A4.44 In the 2025 SNA, the definition of rent has been broadened, from being restricted in the 2008 SNA to natural resources deemed to have an infinite life, to all payments/receipts related to the use of non-produced non-financial assets (regardless of their life span). This also includes payments related to obtaining observable phenomena collected from users of, for example, social media or the internet more generally. Observable phenomena are facts or situations whose characteristics and attributes may be recorded. As such, they are often the objective of collecting data.

9. Delineating individual insurance and social insurance

Reference: chapter 9, paragraph 9.67 and paragraph 9.79; chapter 24, paragraph 24.10, paragraph 24.91 and paragraph 24.100

A4.45 The treatment of hybrid individual insurance, while not leading to a change in conceptual guidance, is further clarified in the 2025 SNA. While insurance products with a saving component are typically classified as life insurance, and products where claims are paid only if the insured event occurs are classified as non-life insurance, hybrid products are allocated to one category or the other depending on which features are predominant.

A4.46 The 2025 SNA clarifies the treatment of employer-independent social insurance schemes, as being part, or not, of social insurance. In the case of pension schemes, these schemes are typically only classified as social insurance, if they constitute autonomous pension funds in which accumulated contributions are set aside for retirement income, and the schemes are subject to regulation or supervision in line with or like employer-related pension schemes/funds. Similar conditions are elaborated for non-pension related schemes for the self-employed and other groups of people. The 2025 SNA also provides clarification on the possibility of treating individual pension trusts as part of social insurance.

10. Accounting for insurance and pensions

Reference: chapter 7, section F9; chapter 8, paragraph 8.159; chapter 24, paragraph 24.19, paragraph 24.28, paragraph 24.33, paragraphs 24.41 to 24.45, paragraphs 24.140 to 24.156, paragraph 24.168 to 24.169, paragraphs 24.186 to 24.191 and paragraphs 24.207 to 24.209; chapter 25, paragraph 25.19

A4.47 The 2025 SNA further clarifies the measurement of output and investment income attributable to insurance policyholders/investment income payable on pension entitlements:

a) For non-life insurance, investment income attributable to insurance policyholders is measured as actual property income on investments from the funds available through insurance technical reserves, excluding holding gains and losses;

b) For reinsurance and standardized guarantee schemes, output and investment income is recorded in line with non-life insurance;

c) For life insurance, all income that is allocated to the life insurance policyholders is recorded as property income, whether or not this income originates from property income or from holding gains (or losses);

d) For pension schemes, a distinction is made between defined contribution pension schemes and defined benefit pension schemes, whereby in the former case the investment income excludes any holding gains and losses, and in the latter case the investment income is set equal to that allocated to the pension entitlements (equal to the unwinding of the pension entitlements using the discount factor), disregarding the source of the income;

e) For autonomous multi-employer pension schemes, simpler guidance is provided for the measurement of output of autonomous pension schemes, in line with the sum of costs method;

f) More generally, clarifications are provided on the treatment of holding gains and losses.

A4.48 Regarding the calculation of (imputed) investment income on the claim between a defined benefit pension fund and its sponsor, the SNA 2025 specifies this as the difference between the unwinding of the pension entitlements and the actual property income received on the investment of the accumulated

assets. The relevant investment income is classified as a separate subcategory (investment income attributable to the surplus/shortfall in defined benefit pension funds). Guidance is also included on the treatment of holding gains and losses and other events affecting the claim between the pension fund and its sponsor.

A4.49 Clarifications are also provided in relation to the treatment of transfers of pension entitlements between pension schemes, including situations in which government assumes the responsibility for pension provision for the employees of a non-government unit. These transfers may be fully requited, partially requited or non-requited. Similarly, further guidance is provided on the recording of benefits payable under a defined contribution pension scheme, which take the form of a lump sum payable on retirement, but for which there is also a requirement of the scheme that these sums are to be immediately converted to an annuity with the same or another financial institution.

A4.50 More explicit guidance is also provided on the recording of defined benefit pension entitlements being affected by changes in the terms of entitlements. If these changes in terms are the result of negotiations between the pension sponsor and beneficiaries, for example via a trade union, or the result of a legislative act, for instance on pension reforms for public sector employees, in which the "negotiation" is deemed to have taken place via the discussion by members of the legislature, the changes in entitlements should be recorded as a capital transfer between the beneficiaries and the pension scheme, and subsequently as a capital transfer between the pension scheme and the pension sponsor. In other cases, the changes in value are to be recorded as other changes in assets and liabilities.

A4.51 In dealing with catastrophes in recording non-life insurance, the 2025 SNA recommends determining at the national level whether a catastrophe is an exceptional event (including the classification of claims arising from a catastrophe), while recognizing that this may lead to inconsistencies in the recording of international transfers. To avoid such inconsistencies, it is recommended to apply a relatively strict delineation of major catastrophic events. The 2025 SNA also extends the recording of capital transfers in the case of catastrophic events to claims related to inventories and non-financial assets other than dwellings, buildings and structures. The recording of reinsurance claims that are related to catastrophic events, as well as the recording of claims in the case of damage to consumer durables, are further clarified. More details are also included regarding the treatment of non-life insurance in the context of distributional national accounts.

11. Leasing of land under buildings

Reference: chapter 27, paragraph 27.28

A4.52 In the 2025 SNA payments for the extension of long-term leases of land under buildings are treated as transactions in land. In the 2008 SNA such payments were recorded as capital formation and an acquisition of an asset in a manner similar to costs of ownership transfer on purchase and sale of an asset.

12. Other changes affecting output and other current and capital transactions

Reference: chapter 9, paragraphs 9.138 to 9.141; chapter 15, paragraphs15.127 to 15.128

A4.53 The 2025 SNA clarifies that the various services contained in travel packages are to be unbundled.

A4.54 The 2025 SNA clarifies that fines and penalties that are punitive in nature should be clearly distinguished from payments of compensation, which are intended to compensate for injury or damages. In respect of the latter, major compensation payments are recorded as capital transfers if they are intended to recover losses incurred over a multi-year period or to replace an asset (financial or non-financial). Furthermore, given the number of appeals that often follow an initial ruling, it is clarified that fines and penalties should not be recorded until the unit issuing the fine or penalty has an unconditional claim to the funds; if a judgment or ruling is subject to further appeal, an unconditional claim only exists when the appeal is resolved.

F. Extensions and further specifications of the concepts of non-financial assets, capital formation and depreciation/depletion, including changes related to other transactions in goods and services

1. Extending the asset boundary for intellectual property products

Reference: chapter 11, paragraphs 11.114 to 11.115; chapter 22, section B2

A4.55 In the 2025 SNA, the information content of electronic data collected and used in production is included in the asset boundary, as a new asset category – data – under (produced) fixed assets. In the 2008 SNA, this information content of electronic data was excluded from the asset boundary. In respect of calculating the production of data for own final use, the 2025 SNA recommends using the sum of costs method. The treatment of copies of data is similar to the treatment of software copies.

A4.56 Consistent with the 2008 SNA, the 2025 SNA excludes marketing assets from the asset boundary. However, for countries where these assets are significant, the compilation of extended accounts in which these are recognized as produced non-financial assets, valued using the sum of costs method in the case of own-account production, is encouraged.

2. Recording of crypto assets without a corresponding liability designed to act as a medium of exchange

Reference: chapter 11, paragraph 11.16 and paragraphs 11.171 to 11.173; chapter 22, section D3

A4.57 In the 2025 SNA, crypto assets without a corresponding liability designed to act as a general medium of exchange (CAWLM), and those designed to act as a medium of exchange within a platform only (i.e., payment tokens without a corresponding liability) (CAWLP)), are treated as non-produced non-financial assets in the 2025 SNA, classified as a separate category. For the recording of crypto assets with a corresponding liability, see section F.1 below. The 2008 SNA provided no guidance on the treatment of crypto assets.

3. Recording of non-fungible tokens

Reference: chapter 12, paragraphs 22.38 to 22.42; chapter 22, section B4 and section D3

A4.58 The 2025 SNA provides the following guidance on the recording of non-fungible tokens (NFTs):

a) NFTs that grant only personal use and display rights are recorded as final consumption (but may transform to valuables at a later stage);

b) NFTs that grant limited commercial rights are recorded as non-produced non-financial assets (contracts, leases and licences), if the owner can derive economic benefits from these rights (e.g., some form of royalties); and

c) NFTs that grant full ownership rights should not be separately recorded, assuming that the associated assets or products have already been accounted for.

4. Depletion of non-produced natural resources

Reference: chapter 7, paragraphs 7.7 to 7.9 and section I; chapter 11, paragraphs 11.236 to 11.238

A4.59 Depletion of non-produced natural resources is recorded as a cost of production in the 2025 SNA, instead of the 2008 SNA treatment as other changes in the volume of assets. Consequently, net domestic product is not only affected by depreciation (known as "consumption of fixed capital" in the 2008 SNA; see table A4.2 below), but also by the amount of depletion (see also section C.1 above).

5. Accounting for mineral and energy resources

Reference: chapter 4, paragraphs 4A.32 to 4A.35; chapter 11, paragraph 11.186, paragraph 11.191, paragraph 11.200 and paragraph 11.201; chapter 14, paragraph 14.57 and paragraph 14.158; chapter 27, paragraphs 27.29 to 27.32 and paragraphs 27.59 to 27.62

A4.60 In the 2025 SNA, the asset boundary for mineral and energy resources explicitly includes renewable energy resources (i.e., the exclusive use of solar, wind, etc., for the production of energy). If not already reflected in the value of land, these resources are explicitly accounted for, if they are viable in economic production under prevailing technological and economic conditions, to be valued using the present value of future resource rents (applying the residual value method). These renewable resources were not explicitly considered as assets in the 2008 SNA.

A4.61 To facilitate the delineation and international comparability of non-renewable mineral and energy resources, the 2025 SNA uses the same three resource classes as in the *SEEA Central Framework* (i.e. "commercially recoverable resources", "potentially commercially recoverable resources", and "non-commercial and other known deposits"). However, the measurement of monetary estimates is restricted to the first class, which in practice could be approximated by those resources for which permissions to exploit have been granted, and/or those for which the existence is explicitly recognized by (past) monetary transactions.

A4.62 The 2025 SNA clarifies the calculation of present values of future resource rents for mineral and energy resources, which had been introduced in the 2008 SNA.

A4.63 In allocating the value of mineral and energy resources, the split-asset approach is adopted in the 2025 SNA, in line with the appropriation of resource rents by both the legal owner (reflected as receipt of rents) and the extractor (reflecting the residual value of the resource rent). (In the 2008 SNA, the full value of the asset was allocated to the legal owner.) In relevant cases, transfers of parts of the resources by the legal owner to the extractor are recorded as other changes in the volume of assets and liabilities, and not as capital transfers. In the case of transferable rights to exploit the resources, double-counting should be avoided by not allocating both the value of the rights and the value according to the split-asset approach to the balance sheet of the extractor. The attribution of depletion costs to the legal owner and the extractor is recorded in line with chapter 5 of the *SEEA central framework*.

6. Accounting for biological resources yielding once-only products

Reference: chapter 11, section D2

A4.64 Although the asset boundary for biological resources has not changed, the 2025 SNA changes the distinction between cultivated (produced) and non-cultivated (non-produced) resources yielding once-only products. It is recommended to distinguish between resources where the control, responsibility and management does not go beyond the establishment of quota regimes (e.g., migrating wild animals and fish) versus resources where one can observe a continuum from intensive to extensive forms of control, responsibility and management (e.g., the growth of trees for timber production). In respect of the latter, all growth of the relevant resources that in the future is intended to be used for the purpose of producing goods is considered as being under some form of management and control by economic agents, instead of applying a discretionary choice between either managed and controlled or not managed and controlled by economic agents. This only leads to a shift in the classification of assets, with no impact on the asset boundary.

A4.65 The degradation of biological resources yielding once-only products, here to be understood as the income generating potential of the underlying asset (e.g., forest land), is recorded as depletion, with any regeneration recorded as negative depletion. Further clarification is also introduced regarding the compilation of work-in-progress for biological resources yielding once-only products, in particular the need to eliminate the possible inclusion of resource rents linked to the underlying asset. In this respect, it should be noted that forest land (i.e., the underlying asset for timber production) is treated as a non-produced non-financial asset, similar to agricultural land.

7. Transfer of ownership

Reference: chapter 7, paragraph 7.122; chapter 11, paragraphs 11.62 to 11.64 ; paragraphs 11.139 to 11.144 and paragraphs 11.223 to 11.227; chapter 23, section C3

A4.66 To determine economic ownership of, in particular, intellectual property products within multinational enterprise groups, a decision tree has been introduced in the 2025 SNA. In this respect, the concept of (economic) ownership, including the transfer of economic ownership, within the setting of multinational enterprise groups, either or not involving special purpose entities (SPEs), is also further clarified.

A4.67 In relation to work-in-progress, the recording in the 2025 SNA of the transfer of ownership is no longer restricted to buildings and other structures (as was the case in the 2008 SNA); it also includes other non-financial assets where production takes several years. Furthermore, the guidance on the conceptually preferred recording of work-in-progress is changed and further clarified, that is, to only record a transfer of the relevant asset in the case of an effective transfer of ownership; to record partially completed structures as work-in-progress, also after a partial handover; and to record differences between stage payments and the effective transfer of ownership as other accounts payable/receivable. In relation to the latter, possible exceptions to the conceptually preferred recording are allowed in the practical implementation, using stage payments as a proxy for transfer of ownership. When there is a partial handover, the recording of these partially completed assets as gross fixed capital formation may have to be applied as a default. Own account production of partially completed non-financial assets should also continue to be recorded as work-in-progress up to the point of completion of the asset, with the recording as gross fixed capital formation as a default option in cases where further information is not available.

8. More general clarifications related to the measurement of non-financial assets

Reference: chapter 7, paragraph 7.39, chapter 10, paragraph 10.75; chapter 11, paragraph 11.42 and paragraphs 11.56 to 11.61; chapter 14, paragraph 14.111

A4.68 The 2025 SNA clarifies, in the case of hire purchase, financial lease and similar types of arrangements, the treatment of the transfer of leased assets at the end of the lease period. It is recommended, from a conceptual point of view, to record these transfers as the building up of a financial claim (equal to the expected value of the asset at the end of lease period), which is extinguished at the time of the transfer of the leased asset. It is recognized that this recording may be difficult in practice, in which case the recording of such transfers as capital transfers is also considered appropriate.

A4.69 Clarifications are also added, where relevant, on the treatment of costs of ownership transfers for different types of assets; and on the dual use of consumer durables for purposes of final consumption and gross fixed capital formation.

9. Measuring depreciation and capital services

Reference: chapter 4, paragraph 4A.11; chapter 7, paragraph 7.283; chapter 13, paragraph 13.61; chapter 17, paragraphs 17.46 to 17.48, paragraphs 17.57 to 17.59 and paragraphs 17.86 to 17.87

A4.70 The 2025 SNA further clarifies the measurement of depreciation (known as "consumption of fixed capital" in the 2008 SNA; see table A4.2 below). It is recommended that geometric depreciation be used as the default option for calculating capital stocks and depreciation, without prohibiting the application of other depreciation and retirement profiles when they are considered more suitable to approximate the decline in value of the assets used in production. In relation to military weapon systems, the 2025 SNA recommends that the depreciation profiles reflect the expected service lives of such assets, thereby taking account of expected losses, noting that the relevant service lives may need to be reviewed in times of conflict. Loss of military weapon systems in military operations that goes beyond expected losses should be recorded as other changes in volume of assets.

A4.71 The measurement of capital services is also updated in view of the changes in the accounting for natural resources (see section F.5 above) and terminal costs (see section G.12 below). Clarifications are also

added on calculating the rate of net return to capital, including clear and consistent guidance on the use of discount rates.

A4.72 The integrated framework for national accounts in the 2025 SNA includes a standard table showing the implicit capital services provided by non-financial assets.

10. Revised classifications and definitions of assets

Reference: chapter 11, paragraph 11.11, paragraph 11.28, paragraph 11.97, paragraph 11.112 and paragraph 11.205; chapter 14, paragraph 14.61; chapter 22, paragraph 22.36; chapter 35, paragraph 35.12, paragraph 35.21; Annex 2 paragraphs A2.36 to A2.38

A4.73 In the 2025 SNA, natural resources are treated as a separate asset class, next to produced non-financial assets (excluding produced natural resources), non-produced non-financial assets (excluding non-produced natural resources), and financial assets (and liabilities). Ecosystem assets, human capital and social capital are recognized as separate asset classes, albeit outside the asset boundary of the integrated framework of national accounts. For certain asset categories, "of which" items are included, as supplementary information, to separately identify certain investments that are considered highly relevant for the transition of the economy to cope with climate change.

A4.74 Costs of ownership transfer on non-produced natural resources as well as work-in-progress related to agricultural products are recorded as part of natural resources in the 2025 SNA.

A4.75 The 2025 SNA classifies artificial intelligence as part of software, by introducing two classes of assets under computer software and databases: (a) computer software, including artificial intelligence systems; and (b) data and databases. Some additional clarifications on the treatment of certain expenditures related to artificial intelligence, such as the exclusion of the cost of producing training datasets and the cost of recurring data services from artificial intelligence, are also included.

A4.76 The overarching category of intellectual property products is redefined in view of the additions of not only artificial intelligence but also data assets (see section F.1 above).

A4.77 The classification of non-financial assets is also affected by the updated guidance on data, crypto assets, non-fungible tokens, mineral and energy resources and biological resources. The full suite of asset categories, including codes, is presented in Annex 2 of the 2025 SNA.

11. Valuation of imports and exports

Reference: chapter 4, paragraphs 4.177 to 4.179; chapter 33, paragraph 33.15

A4.78 In the 2025 SNA, the valuation of imports and exports remain recorded at cost, insurance and freight (cif) and free on board (fob) values, as in the 2008 SNA. However, reference is made to using invoice values as the new principle for valuing imports and exports in the future, after further research on the feasibility of implementing this principle.

G. Further refinement of the treatment and definition of financial corporations, financial instruments and financial assets

1. Recording of crypto assets with a corresponding liability

Reference: chapter 12, paragraph 12.54, paragraph 12.56, paragraph 12.70 and paragraph 12.77; chapter 22, section D3; chapter 25, paragraph 25.143

A4.79 The 2025 SNA provides recommendations on the classification of crypto assets with a corresponding liability, as follows:

(a) Crypto assets with a corresponding liability designed to act as a general medium of exchange:

(i) Issued by a monetary authority: to be classified as currency under "currency and deposits" and;

(ii) Not issued by a monetary authority: to be classified under a separate new financial asset class, under "currency and deposits".

(b) Crypto assets that act only as a medium of exchange within a platform or network (i.e., payment tokens) are classified as separate subcategories under "debt securities" on the basis of whether they are short-term or long-term.

(c) Security crypto assets (which always have a counterpart liability):

(i) Debt security crypto assets: to be classified under "debt securities", as short-term or long-term as appropriate;

(ii) Equity crypto assets: to be classified under "equity and investment fund shares and units";

(iii) Derivative crypto assets: to be classified under "derivatives and employee stock options";

(iv) Utility tokens: to be classified under a separate subcategory under "debt securities".

2. Debt securities

Reference: chapter 14, paragraph 14.72

A4.80 Explicit guidance is introduced in the 2025 SNA for compiling, as supplementary items, stocks of debt securities at nominal value for liability positions.

3. Accrual of interest on bonds issued at a premium/discount with regular coupon payments

Reference: chapter 25, paragraphs 25.172 to 15.173

A4.81 In the 2025 SNA, the single effective interest rate approach is the preferred approach for calculating accrued interest on bonds issued at a premium/discount with regular coupon payments. The 2008 SNA approach, which separates the interest due on the discount and the interest due to the coupon, is noted as an accepted alternative.

4. Loans

Reference: chapter 14, paragraph 14.73

A4.82 The valuation of loans at nominal values is maintained in the 2025 SNA. However, the possibility to reassess the value of loans is somewhat broadened. In addition to specific transactions, such as debt forgiveness or restructuring, the value of loans may also be affected by value resets recognized by the creditor, such as in cases of bankruptcy, liquidation, or other factors. The other factors should be restricted to re-assessments in cases there is evidence of loan deterioration due to publicly known events (e.g., in the context of bank recovery operations.

5. Equity and investment fund shares/units

Reference: chapter 12, paragraphs 12.94 and 12.98; chapter 14, paragraphs 14.81 to 14.89

A4.83 The 2025 SNA provides explicit guidance on the recording of (equity) subscription rights, as part of equity.

A4.84 The 2025 SNA clarifies that all equity in international organizations, both equity in the form of unlisted shares and equity in the form of non-negotiable equity, should be classified as part of "other equity". In line with this, the term "other equity" is changed to "other equity and equity in international organizations".

A4.85 The valuation of unlisted equity is also clarified, namely, in the absence of an observed market price, to use the theoretical exchange value for the corporation. In doing so, the following methods are presented in order of preference: own funds at book value, recent transaction prices, and market capitalization. (The 2008 SNA presented these methods, along with others, without providing an order of preference). To guide compilers in choosing the appropriate method, a decision tree is introduced.

6. Negative equity

Reference: chapter 14, paragraphs 14.86 to 14.89

A4.86 The 2025 SNA provides guidance on the treatment of negative equity positions, which was not provided in the 2008 SNA. Where negative equity is encountered, it should not be set to zero, except for specific cases where a shareholder's and its affiliates' liability is strictly limited to the existing equity investment in the sense that they would not suffer any other direct economic losses than the existing equity investment and would not be likely to assume any new financial obligations in the event of bankruptcy or termination of the entity. The treatment of negative equity is also included on the post-2025 SNA research agenda (see annex 5).

7. Uncompensated asset seizures

Reference: chapter 23, paragraphs 13.123 to 13.124

A4.87 The 2025 SNA provides guidance on the issue of asset seizures for units that are only indirectly impacted through their ownership of units that have had their asset seized, which was not provided in the 2008 SNA. The impact of such seizures on the value of the equity of the units that have had assets seized is treated as a revaluation. The same treatment is recommended in the case of other changes in the volume of assets and liabilities of a unit, the values of which may affect the equity of the owner.

8. Accounting for pension entitlements

Reference: chapter 24, paragraph 24.127 and 24.210

A4.88 The 2025 SNA provides more consistent guidance regarding the recognition of pension entitlements for employment-related schemes that are not intertwined with social security type schemes. In relation to such schemes provided by public employers, entitlements are to be recorded in the sequence of economic accounts, if these schemes are similar to those provided by private employers, in particular in respect of the terms and conditions of compensation, both current and future after retirement.

A4.89 In addition to the supplementary table in the 2008 SNA showing the amount of pension entitlements for all pension schemes, whether included in, or excluded from, the sequence of economic accounts, the 2025 SNA recommends a supplementary table on household retirement resources. As the scope of assets to be included may differ across countries, the detailed information on the various arrangements improves the comparability of results across countries.

9. Financial derivatives

Reference: chapter 12, paragraphs 12.135 to 12.136 and paragraphs 12.139 to 12.140; chapter 25, paragraphs 25.59 to 25.60 and paragraphs 25.87 to 25.93

A4.90 The 2025 SNA includes three breakdowns of financial derivatives: (a) by market risk – as standard breakdown; (b) by instrument – as a supplementary breakdown; and (c) by trading venue – supplementary breakdown. In addition, the usefulness of having information on the currency composition of notional values of derivatives linked to foreign currencies is noted.

A4.91 The 2025 SNA provides guidance on the recording of novation and portfolio compression. Novation is a process in which a bilateral over-the-counter derivative contract between two market participants is replaced by two bilateral contracts between each of the market participants and a central counterparty. Portfolio compression refers to a bilateral or multilateral process in which the counterparties wholly or partially terminate the derivatives submitted for inclusion in the portfolio compression and replace the terminated derivatives with new derivative(s) whose combined notional value is less than the combined notional value of the terminated derivatives. The cases where a net recording (i.e., assets minus liabilities) is acceptable is also clarified.

A4.92 Regarding the classification of credit default swaps, the 2025 SNA recommends classifying these financial instruments as "options" within the instrument-based breakdown and as "credit derivatives" under the market risk breakdown. Additional clarifications on credit default swaps are provided.

10. The treatment of some specific transactions

Reference: chapter 8, paragraphs 8.124 to 8.125; chapter 12 paragraph 12.46, paragraph 12.52, paragraphs 12.80 to 12.85 and paragraph 12.138; chapter 25, paragraph 25.138; chapter 29, paragraph 29.88

A4.93 Regarding the recording of reverse transactions, the 2025 SNA changes the recording of "manufactured" interest/dividends. In these cases, a negative credit in interest/dividends is recorded for the security borrower in addition to the positive credit in interest/dividends for the security lender. The recording of reverse transactions is further clarified, for example the recording of negative assets for short-sales; the recording of different types of reserve transactions; the recording of reserve transactions on commodities; and the separate identification of transactions related to repos (repurchase agreements).

A4.94 In the 2025 SNA monetary gold under reverse transactions, such as gold swaps, which is generally not readily available for balance of payments financing needs, are excluded from reserve assets and either demonetized (in the case of gold bullion) or reclassified as other investment, currency and deposits (in the case of unallocated gold accounts).

A4.95 The 2025 SNA provides guidance on the treatment of cash collateral (other than cash margins for financial derivatives and the supply and receipt of cash under reverse transactions) as being the same as that for cash margins for financial derivatives, whereas the 2008 SNA provided no guidance.

A4.96 The 2025 SNA clarifies that off-market central bank currency swap arrangements are treated as an exchange of deposits with maintenance of value. However, if the central banks conduct the transaction as a standard (market priced) currency swap, then the swap is recorded as an exchange of deposits with the simultaneous creation of a financial derivative (i.e., a forward contract).

11. Sustainable finance

Reference: chapter 12, paragraphs 12.151 to 12.152; chapter 35, section F7

A4.97 To arrive at an improved accounting for sustainable finance, the 2025 SNA introduces supplementary items in the financial accounts and balance sheets for debt securities, loans, and equity used for financing or refinancing activities that sustain or improve the condition of the environment, society or governance

practices. Similarly, supplementary items are introduced for relevant financial instruments that raise money for climate and environmental projects (green financing).

12. Constructive liabilities, contingent asset and liabilities, and provisions

Reference: chapter 4, paragraphs 4.102; chapter 14, paragraphs 14.115

A4.98 In the 2025 SNA constructive liabilities are generally not recognized, with the exception of standardized guarantees. (The 2008 SNA allowed the possibility of recognizing constructive liabilities, but provided no examples of such liabilities, including where they would be recorded.)

A4.99 The 2025 SNA provides more detailed guidance on provisions. Three categories of provisions (provisions related to financial assets, provisions related to non-financial assets, and provisions unrelated to assets) are distinguished in a supplementary table. No conceptual changes are made to the treatment of provisions related to financial assets. However, for terminal costs related to non-financial assets, expected terminal costs are included in the value of the relevant fixed assets.

H. Further specifications of the scope of transactions concerning government and the public sector

1. Emission permits

Reference: chapter 8, paragraph 8.102; chapter 12, paragraph 12.146; chapter 27, paragraphs 27.77 to 27.85

A4.100 The 2025 SNA records emission permits as financial assets (other accounts receivable/payable), with taxes on production recorded at surrender, valued at issuance prices. The recording of emission permits was not fully addressed in the 2008 SNA.

2. Stability fees

Reference: chapter 8, paragraph 8.84

A4.101 The 2025 SNA provides guidance on stability fees, such as payments for deposit insurance schemes, which could be classified as either a tax or as a payment for an insurance-type of transaction. To determine the appropriate recording, the criterion of proportionality between payments and the provision of an insurance-type of service (including payments for the risk element) should be examined on a case-by-case basis. The existence of a fund functioning on insurance rules with a full set of accounts may indicate proportionality, while payments not being put aside or being able to be used for other purposes, may be indicative for treating the payments as a tax.

3. Distinction between taxes and services more generally

Reference: chapter 8, paragraphs 8.82 to 8.83 and paragraph 8.173; chapter 30, paragraphs 30.87 to 30.91

A4.102 The 2025 SNA considers payments for licences required under a mandatory process as generally being unrequited, and thus to be recorded as taxes. However, for cases where the 2008 SNA conceptual guidance for distinguishing between taxes and services is considered more appropriate, clarification on its application in practice is provided.

A4.103 The 2025 SNA provides clarification on the treatment of payments related to the use or extraction of natural resources. In particular, it is specified that rents received by the legal owner of a natural resource should include any payments from a user/extractor of that resource that are linked to the use/extraction or to the quantity and/or value of that resource (including royalties, surtaxes and permits).

A4.104 A decision tree for the classification of payments to government is introduced into the 2025 SNA.

4. Rerouting of transactions through government

Reference: chapter 30, paragraphs 30.169 to 30.171

A4.105 New guidance on the rerouting of transactions through government is introduced in the 2025 SNA. Scenarios where guidance is given for transactions between two (or more) non-government actors to be rearranged through the government accounts include: (a) where government replaces a pre-existing scheme involving payments to and from government with a new scheme under which the payments, which provide a similar economic outcome, are made directly and not through government; (b) where government mandates cash payments between economic actors that would not take place without the government intervention; and (c) where government instigates a price cap, or price fix, but has a mechanism to fund the difference between the price cap and the market price (or another price), perhaps at a future date.

5. Public-private partnerships

Reference: chapter 30, paragraphs 30.155 to 30.165

A4.106 The 2025 SNA provides more detailed guidance on the recording of public-private partnership, building on the guidance in the 2008 SNA and guidance developed in the context of government finance statistics.

6. Treatment of non-resident special purpose units owned or controlled by general government

Reference: chapter 4, paragraphs 5.94 to 5.96 ; chapter 30, paragraph 30.52

A4.107 No changes are made to the principle of recording special purpose units set up by government as non-resident units. However, the 2025 SNA describes an enhanced set of imputations, to better reflect the fiscal operations of government controlled special purpose entities.

7. Recording of other government-related transactions

Reference: chapter 9, paragraph 9.60 and paragraph 9.148

A4.108 The 2025 SNA provides guidance on the recording of non-refundable contributions to obtain citizenship as a transfer (current or capital), due to the voluntary nature of these contributions.

A4.109 Guidance is provided in the 2025 SNA on the recording of tax amnesty programmes, which concerns, in particular, the time of recording. Following the accrual basis of recording, any adjustment to taxes due to an under/overestimation should be implemented in the period in which the under/overestimation occurred. However, in cases where it is not possible to identify the time of the under/overestimation, the adjustment is necessarily recorded when the need for the adjustment is identified.

I. Broadening the framework of national accounts to address well-being and sustainability

Reference: chapter 2; chapter 5, paragraph 5.39; chapter 16; chapter 34; chapter 35

A4.110 The 2025 SNA contains three new chapters on accounting for well-being and sustainability. Chapter 2 on National accounts and its contribution to measuring well-being and sustainability discusses, in general terms, the role of the SNA in capturing (aspects of) well-being and sustainability, to clearly communicate what role major macroeconomic indicators from the system of national accounts can, and cannot, play when it comes to capturing broader aspects of well-being and sustainability. Chapter 34 on Measuring well-being includes a general discussion on various approaches and methods to measure (material) well-being and how a suite of additional breakdowns and extended/thematic accounts and tables can support this. Chapter 35 on Measuring the sustainability of well-being discusses the monitoring of sustainability using the capital approach and the main changes and additions to the integrated framework of national accounts to better account for natural capital, human capital and social capital. In respect of capturing natural capital, the 2025 SNA provides a short introduction to the *SEEA Central Framework and the SEEA Ecosystem Accounting* as systems to monitor environmental sustainability more broadly.

A4.111 Some of the issues related to supporting the measurement of well-being and sustainability are addressed in the integrated framework of national accounts, for example, the distribution of household income, consumption, saving and wealth, and a broader set of standard tables for labour input in the form of labour market tables. Other aspects, which are outside the scope of the integrated framework of national accounts, can be addressed through a suite of thematic and extended accounts.

A4.112 Regarding distributional information, the 2025 SNA recommends standard breakdowns of the household sector in chapter 5 on Institutional units and sectors, economic territory and residence (see also section. D.1 above). In addition, a specific section on households is included in chapter 32 on Households, which focuses on the compilation of distributional accounts in line with totals in the sequence of economic accounts, by highlighting the importance of this type of information; discussing the scope of the work linking the relevant distributional information to respective parts of the SNA sequence of economic accounts; discussing specific balancing items of relevance and where these may, or may not, deviate from the standard sequence of economic accounts; presenting possible distributional breakdowns; and highlighting specific issues in the compilation of distributional results.

A4.113 In relation to labour input, the 2025 SNA chapter 16 on Labour highlights the importance of providing more detail on labour input in the form of labour market tables, by presenting the scope and coverage of the proposed tables; linking the labour market tables to relevant parts in the integrated framework of the SNA and also to the definitions included in the resolutions of *ICLS Resolutions*; and discussing measurement issues. In addition, chapter 34 on Measuring well-being introduces thematic accounts for education and training, building on existing material, particularly the *Satellite account for education and training: compilation guide,* and provides recommendations on starting to develop extended accounts for human capital, in particular compiling cost-based and income-based measures of human capital, in line with the *Guide on measuring human capital*.

A4.114 Chapter 34 also includes recommendations on compiling extended accounts on unpaid household activities, in monetary terms as well as physical units, in line with the *Guide on valuing unpaid household service work*; as well as thematic accounts related to health and social conditions, based on *A system of health accounts*.

J. Other enhancements to the content of the SNA

1. Price and volume measurement

Reference: chapter 18, section E

A4.115 The 2025 SNA provides guidance on the measurement of prices and volumes for specific products, similar to the guidance on measuring output for certain industries provided in the 2008 SNA chapter 6 on The production account. This includes specific guidance related to the impact of digitalization on prices and volumes of products. Guidance is also included on the measurement of the implicit financial

services on loans and deposits (known as "financial intermediation services indirectly measured" (FISIM) in the 2008 SNA; see table A4.2 below) in volume terms, as well as ways in which to deal with substantive changes in the provision of education and health (such as the changes driven by the COVID-19 pandemic).

2. Accounting under conditions of high inflation

Reference: chapter 20, section E

A4.116 Guidance on accounting under conditions of high inflation, provided in chapter XIX, section G, of the 1993 SNA, has been reintroduced in the 2025 SNA, with references to the *Inflation Accounting: A manual on national accounting under conditions of high inflation*.

3. Digitalization

Reference: chapter 7, paragraphs 7.40 to 7.46; chapter 22, paragraphs 22.56 to 22.75, paragraphs 22.115 to 22.120 and paragraphs 22.121 to 22.128

A4.117 To increase the visibility of digitalization in the national accounts, the 2025 SNA encourages the compilation of digital supply and use tables. More details on these extended accounts are provided in chapter 22 on Digitalization, based on available guidance, such as the *Handbook on compiling digital supply and use tables*.

A4.118 The 2025 SNA does not change the conceptual treatment of "free" digital products, such as Facebook, Instagram and TikTok. However, further clarification on the treatment of these products, including regarding the treatment of "assets used to produce services that are free or remunerated indirectly", is provided. The 2025 SNA also encourages the development of extended accounts or supplementary tables for "free" digital products, as part of digital supply and use tables.

4. Globalization

Reference: chapter 23, paragraphs 23.80 to 23.82 and paragraphs 23.89 to 23.95; chapter 29, paragraphs 29.28 to 29.33

A4.119 To analyse the phenomenon of globalization and its impact on (the interpretation of) macroeconomic statistics and indicators, 2025 SNA chapter 23 on Globalization encourages the development, as supplementary information, of extended supply and use tables and estimates on trade in value added.

A4.120 In addition, the relevance, for certain types of analysis, of compiling statistics according to the nationality concept is highlighted.

5. Productivity

Reference: chapter 18, section F

A4.121 The 2025 SNA provides enhanced guidance on the measurement of productivity in chapter 18 on Measuring prices, volumes and productivity.

6. Elaborating the accounts

Reference: chapter 20, section B, section C and section D

A4.122 The 2025 SNA provides, in chapter 20 on Elaborating the accounts, enhanced guidance on quarterly national accounts, regional accounts and the time series aspects of national accounting.

K. Changes relating to communicating and disseminating macroeconomic statistics, including changes in terminology

1. Changes in terminology

Reference: chapter 21, paragraphs 21.114 to 21.115

A4.123 The 2025 SNA changes the 2008 SNA names of several accounts, and changes several specific 2008 SNA terms, with the general aim of making terminology more understandable to users of the national accounts. The changes to the names of the accounts within the SNA sequence of economic accounts is shown in table A4.1 and changes to specific terms are shown in table A4.2.

Table A4.1: Changes to the names of the accounts within the SNA sequence of economic accounts

2008 SNA Terminology	2025 SNA Terminology	Economic Accounts Groups
The production account	No change	Current accounts
The distribution of income accounts	The earned income accounts	
The generation of income account	The generation of earned income account	
The allocation of primary income account	The allocation of earned income account	
The entrepreneurial income account	No change	
The allocation of other primary income account	The allocation of other earned income account	
The redistribution of income accounts	The transfer income accounts	
The secondary distribution of income account	The income transfers other than transfers in kind account	
The redistribution of income in kind account	The social transfers in kind account	
The use of income account	No change	
The use of disposable income account	No change	
The use of adjusted disposable income account	The use of disposable income adjusted for social transfers in kind account	
The capital account	No change	Accumulation accounts
The financial account	No change	
The other changes in the volume of assets account	Other changes in the volume of assets and liabilities account	

2008 SNA Terminology	2025 SNA Terminology	Economic Accounts Groups
The revaluation account	No change	
Balance sheets	No change	Balance sheets

Table A4.2: Changes to specific terms

SNA 2008 Terminology	SNA 2025 terminology
Adjusted disposable income	Disposable income adjusted for social transfers in kind
Balance on goods/services/goods and services	Balance of international trade in goods/services/goods and services
Balance of primary incomes	Balance of earned incomes
Compensation of employees	Remuneration of employees
Constant prices	In volume terms
Consumption of fixed capital	Depreciation
Financial intermediation services indirectly measured (FISIM)	Implicit financial services on loans and deposits
Imputed rental of owner-occupied dwellings	Owner-occupied housing services
Net errors and omissions	Statistical discrepancy
Net fees	Fees less service charges
Net guarantees	Guarantees less service charges
Net non-life insurance premiums	Non-life insurance premiums less service charges
Net re-insurance premiums	Re-insurance premiums less service charges
Net social contributions	Social contributions less service charges
Primary income	Earned income
Product balance	Balance of the supply and use of products
Purchases less sales of goodwill and marketing assets	Acquisitions less sales of goodwill and marketing assets
Resource lease	Natural resource lease
Resources	Revenues
Trade margin	Distribution margin
Uses	Expenditures

2. Introduction of a taxonomy for releases and statistical products

Reference: chapter 21, paragraphs 21.69 to 21.79 and section F

A4.124 The 2025 SNA chapter 21 on Communicating and disseminating macroeconomic statistics introduces a taxonomy related to the release of the various vintages of data, thereby defining terms such as reference period, update period, regular/routine revision, comprehensive revision, benchmark estimate, time-series, etc. It also recommends, when reporting updated/revised estimates to users, to categorize and decompose updates of statistics into conceptual changes, methodological changes, accounting changes,

coverage adjustments, source data changes, quality changes (e.g., improved seasonal adjustment, data validation changes, balancing adjustments, etc.) and presentational changes.

A4.125 Chapter 21 also introduces a classification for products that reflects differences in quality standards (e.g., official statistics versus experimental estimates), as well as a classification for the different parts of the SNA (e.g., integrated framework of national accounts, extended accounts, thematic accounts, supplementary items, etc.).

3. Alignment with international standards

Reference: chapter 21, section G

A4.126 A framework for assessing the alignment of national macroeconomic statistics with international economic accounting statistical standards is introduced in the 2025 SNA chapter 21 on Communicating and disseminating macroeconomic statistics.

L. Changes to the structure of the SNA

A4.127 The structure of the 2025 SNA differs from that in the 2008 SNA. Table A4.3 below compares the structures of the two editions. The more significant changes include:

- The inclusion of new chapters in the 2025 SNA covering: National accounts and its contribution to measuring well-being and sustainability (chapter 2); Communicating and disseminating macroeconomic statistics (chapter 21); Digitalization (chapter 22); Globalization (chapter 23); Islamic finance (chapter 26); Financial corporations (chapter 29); Measuring well-being (chapter 34); and Measuring the sustainability of well-being (chapter 35).
- Splitting of the 2008 SNA Chapter 17 on Cross-cutting and other special issues into three chapters in the 2025 SNA: Insurance and pensions (chapter 24); Selected issues in financial instruments (chapter 25); and Contracts, leases, licenses and permits (chapter 27).
- The inclusion of a new annex in the 2025 SNA on International standards for macro-economic statistics, and links with the SNA (annex 1).

A4.128 In addition, the following chapters in the 2025 SNA have significantly revised content compared to their corresponding chapters in the 2008 SNA: Introduction (chapter 1); Labour (chapter 16); Capital services (chapter 17); Measuring prices, volumes and productivity (chapter 18); Summarizing, integrating and balancing the accounts (chapter 19); Elaborating the accounts (chapter 20); Non-financial corporations (chapter 28); Households (chapter 32); Input-output tables (chapter 36); From whom-to-whom tables and related financial indicators (chapter 37); Thematic and extended accounts (chapter 38); and Informal economy (chapter 39).

A4.129 Also, the order of some chapters and the titles of some chapters have been changed, as indicated in table A4.3.

A4.130 A feature of the 2025 SNA is that it is fully consistent with the seventh edition of the IMF's *Balance of Payments and International Investment Position Manual* (BPM). An aspect of this is that several chapters in the two standards are "joint chapters" with identical text (apart from certain SNA-specific or BPM specific-text). The 2025 SNA chapters that are "joint chapters" are: Flows, stocks and accounting rules (chapter 4); Institutional units and sectors, economic territory and residence (chapter 5); Communicating and disseminating macro-economic statistics (chapter 21); Digitalization (chapter 22); Globalization (chapter 23); Islamic finance (chapter 26) and Informal economy (chapter 39).

Table A4.3: The structure of the 2025 SNA compared to the structure of the 2008 SNA

The structure of the 2008 SNA	The structure of the 2025 SNA
	A. Introduction and overview
Chapter 1. Introduction	Chapter 1. Introduction (revised content)
	Chapter 2. National accounts and its contribution to measuring well-being and sustainability (new chapter)
Chapter 2. Overview	Chapter 3. Overview of the integrated framework (revised title)
	B. The main foundations
Chapter 3. Stocks, flows and accounting rules	Chapter 4. Flows, stocks and accounting rules (revised title)
Chapter 4. Institutional units and sectors	Chapter 5. Institutional units and sectors, economic territory and residence (revised title)
Chapter 5. Enterprises, establishments and industries	Chapter 6. Enterprises, establishments and industries
	C. Structure of the framework and the sequence of economic accounts
Chapter 6. The production account	Chapter 7. Production account
Chapter 7. The distribution of income accounts	Chapter 8. Earned income accounts (revised title)
Chapter 8. The redistribution of income accounts	Chapter 9. Transfer income accounts (revised title)
Chapter 9. The use of income accounts	Chapter 10. Use of income accounts
Chapter 10. The capital account	Chapter 11. Capital account
Chapter 11. The financial account	Chapter 12. Financial account
Chapter 12. The other changes in assets account	Chapter 13. Other changes in assets and liabilities accounts (revised title)
Chapter 13. The balance sheet	Chapter 14. Balance sheet
Chapter 14. The supply and use tables and goods and services account	Chapter 15. Supply and use tables (revised title)
	Chapter 16. Labour (chapter 19 in the 2008 SNA, moved upwards, revised title and revised content)
	Chapter 17. Capital services (chapter 20 in the 2008 SNA, moved upwards, revised title and revised content)
Chapter 15. Price and volume measures	Chapter 18. Measuring prices, volumes and productivity (revised title and revised content)
Chapter 16. Summarizing and integrating the accounts	Chapter 19. Summarizing, integrating and balancing the accounts (revised title and revised content)
Chapter 17. Cross-cutting and other special issues	See Chapters 23 to 25 below
Chapter 18. Elaborating and presenting the accounts	Chapter 20. Elaborating the accounts (revised title and revised content)
	Chapter 21. Communicating and disseminating macro-economic statistics (new chapter)
Chapter 19. Labour accounts and population	See Chapter 16 above
Chapter 20. Capital services and the national accounts	See Chapter 17 above
	Chapter 22. Digitalization (new chapter)
	Chapter 23. Globalization (new chapter)
	Chapter 24. Insurance and pensions (Parts 1 and 2 of chapter 17 in the 2008 SNA, moved downwards)

The structure of the 2008 SNA	The structure of the 2025 SNA
	Chapter 25. Selected issues in financial instruments (Parts 3, 4 and 6 of chapter 17 in the 2008 SNA, moved downwards)
	Chapter 26. Islamic finance (new chapter)
	Chapter 27. Contracts, leases, licenses and permits (Part 5 of chapter 17 in the 2008 SNA, moved downwards)
	E. Institutional units and sectors in more detail
Chapter 21. Measuring corporate activity	Chapter 28. Non-financial corporations (revised title and revised content)
	Chapter 29. Financial corporations (new chapter)
Chapter 22. The general government and public sectors	Chapter 30. General government and the public sector (revised title)
Chapter 23. Non-profit institutions	Chapter 31. Non-profit institutions
Chapter 24. The households sector	Chapter 32. Households (revised title and revised content)
Chapter 25. Informal aspects of the economy	See Chapter 39 below
Chapter 26. The rest of the world accounts and links to the balance of payments	Chapter 33. Transactions between residents and non-residents (revised title)
	F. Extended and thematic accounts and tables
	Chapter 34. Measuring well-being (new chapter)
	Chapter 35. Measuring the sustainability of well-being (new chapter)
Chapter 27. Links to monetary statistics and the flow of funds	See Chapter 37 below
Chapter 28. Input-output and other matrix based analyses	Chapter 36. Input-output tables (revised title and revised content)
	Chapter 37. From-whom-to-whom tables and related financial indicators (chapter 27 of the 2008 SNA, moved downwards, revised title and revised content)
Chapter 29. Satellite accounts and other extensions	Chapter 38. Thematic and extended accounts (moved upwards, revised title and revised content)
	Chapter 39. Informal economy (moved downwards, revised title and content)
	G. Supplementary material
	Annex 1. International standards for macro-economic statistics, and the links with the SNA (new annex)
1. The classification hierarchies of the SNA and associated codes	Annex 2. The classification hierarchies of the SNA and associated codes (revised content)
Annex 2. The sequence of accounts	Annex 3. The sequence of accounts
Annex 3. Changes from the 1993 System of National Accounts	Annex 4. Changes from the 2008 System of National Accounts (revised title)
Annex 4. Research agenda	Annex 5. Research agenda
References	References
Glossary	Glossary
Index	Index

Annex 5: Research Agenda

A common research agenda has been developed for the 2025 SNA and BPM7. Most of the issues are relevant to both standards, while some issues are only relevant to the 2025 SNA or the BPM7.

A. Introduction

A5.1 The SNA is designed to give a realistic and compact view of the economy that is suitable for policy and analytical use. As the economy changes and policy and analytical needs evolve, the SNA must be reviewed to see if it is still relevant for these purposes. Examples of changes in economic conditions that provoke a reassessment of the adequacy of the national accounting framework are the rapid advances in digital technologies and global production arrangements, changes in financial markets and the continuous need to better account for elements affecting well-being and sustainability.

A5.2 It is unusual for economic perspectives to change quickly and dramatically as was the case with the financial crisis that occurred in 2007-08. However, there are always some emerging features that may cause national accountants to re-assess their current methodology. One example is the developments related to crypto assets, particularly the classification of crypto assets and related transactions. Developments relating to crypto assets without a corresponding liability designed to act as a medium of exchange will be monitored and the recommendation to classify them as non-produced non-financial assets will be reviewed if there are significant market, regulatory and/or accounting changes that may justify updated guidance.

A5.3 It is not possible to expect to capture all the issues that will arise even in the near future. The objective of this annex is to list those that have emerged in the course of the present update but where more extensive consideration is needed than was possible in the course of the update. Some may result not in changes to the SNA but simply greater clarification of some points. This list will be kept on the United Nations Statistics Division website and updated as new items emerge and those recommendations on existing items are agreed.

A5.4 Priorities for resolving research issues will be set in accordance with the principles for identifying issues for consideration as set out in update procedures established by the Statistical Commission These principles are guided by three key questions:

a. How urgent and important is the topic to ensure that the SNA continues to be relevant to the users?

b. How widespread are the consequences of change and how complicated will implementation be?

c. Is the topic completely new or has much of the preparation for considering the item been completed?

A5.5 The process of selecting items for investigation is one that will involve widespread consultation and involvement of both compilers and users in the review process.

A5.6 All attempts to update the SNA, including the experience of the 1993 and 2008 revisions and the 2025 update, show that it is very difficult to update only parts of the system because of the integrated nature of the accounting rules. The list of issues that follows is grouped broadly by subject area but it should be recognized at the outset that each is likely to have consequences beyond the subject heading.

A5.7 The topics identified to date have been grouped into five broad headings. These are:

a. Basic accounting rules;

b. The concept of income;

c. Issues concerning financial instruments;

d. Issues involving non-financial assets; and

e. Emerging issues.

A5.8 Each of these is the subject of one of the following sections.

B. Basic accounting rules

1. Valuation of imports and exports of goods

A5.9 Imports and exports of goods remain to be recorded in the SNA and BPM on a free on board (FOB) basis where goods are valued at the exporter's border—that is, including the cost of insurance and freight incurred up to the point of the goods leaving the economy of the exporter. Since this recording is not fully reconciled with the principle of valuing output at basic prices used for domestic transactions in the SNA, the 2025 SNA and BPM7 recognised that in principle imports and exports should in future be valued using invoice values. Further research on the feasibility of implementing this principle is required.

2. Accounting for the economic activities of non-resident units making use of quota established for fishing in a country's Exclusive Economic Zone (EEZ)

A5.10 Concerns about the recording of fishing rights of a non-resident operator in a country's Exclusive Economic Zone were raised in relation to the accounting for depletion in such cases. Even though the issue is not new in the SNA, the accounting for depletion as a cost of production highlights additional complications, amongst others for the recording in the balance of payments, where transactions in the capital account are restricted to capital transfers and acquisitions, less disposals, of non-produced non-financial assets. While recording all these various transactions can be envisaged conceptually following standard SNA and BPM principles, there are likely many practical compilation issues to consider, if only because it may require the international exchange of data on the economic activities of the non-resident operators (unless the national statistical office would be able to collect data from the non-resident operator directly).

A5.11 Alternative conceptual framings to describe the economic ownership of the fishery by a non-resident could be envisaged and a complete working through of the wider implications for any approach on balancing items, macroeconomic aggregates and related matters needs further investigation in the SNA, BPM and SEEA context.

3. Pension funds as policyholders of life insurance policies

A5.12 In the current guidance, the policyholder of a life insurance policy is always an individual. However, it is argued that pension funds can also buy life insurance policies (other than group life schemes) for its members; they buy annuities from life insurance companies on behalf of the fund. In such cases, the pension funds could have claims on the technical reserves of life insurers, including related investment income.

A5.13 It is not clear whether the pension fund is simply behaving on behalf of its policyholders, or if the pension fund's role is more than intermediation. This could also apply to other institutional investors. The resolution of this issue and its impact on the current guidance needs further investigation.

4. Secondary markets for insurance policies and life settlements

A5.14 Some insurance policyholders sell their existing insurance policies to third parties. The sale of an existing insurance policy to a third party for a one-time cash payment is called a life settlement. The payment is more than the surrender value but less than the benefit at the time of death. Typically, existing life insurance policies, such as whole life insurance, variable life insurance and universal life insurance, are sold, but in some instance, existing term insurance policies can be sold as well. Life settlements essentially create a secondary market for life insurance policies. Also, by selling it, the insured person transfers every aspect of the life insurance policy to the new owner. This means the investor who takes over the policy inherits and becomes responsible for everything related to the policy, including the receipts of premiums along with the payments of benefits.

A5.15 More research is needed on how to record the transactions and positions between the sellers of existing insurance policies and the third-party buyers of these policies. Additionally, guidance on how to sectorize these third-party buyers and how to calculate their output should be provided. This issue should be

coordinated with the research on Issue 3 (pension funds as policy holders of life insurance policies).

5. The treatment of cross-border social transfers in kind

A5.16 In the SNA and BPM, social transfers in kind only take place between government units, NPISHs and households. Paragraph 11.34 of the BPM7 says: "In addition, goods and services provided free to non-residents by government and NPISHs of the economy they are visiting, known as social transfers in kind (e.g., free health services received by a foreign tourist from a hospital within general government) should be imputed and recorded under travel." Paragraph 9.153 of the 2025 SNA explains that it is assumed that the amounts of social transfers in kind payable to the rest of the world are probably negligible and, in any case, can be assumed to be offset by similar benefits receivable from the rest of the world. In some cases, these assumptions may be inappropriate and an explicit way of recording these could be elaborated. Such an elaboration would have to consider the consequences of having a difference between total final consumption expenditure and total actual consumption. It could also result in two concepts of imports and exports, i.e., excluding and including social transfers in kind.

6. Calculation of implicit financial services on loans and deposits

A5.17 The following topics on the recording of implicit financial services on loans and deposits require further investigation:

a. Further develop the conceptual arguments to either include or exclude credit default risk (CDR) in the calculation of implicit financial services on loans and deposits and in the case of excluding CDR to develop methods and data that could support a possible exclusion of CDR in the future;

b. Consider possible hybrid approaches to price and volume measurement;

c. Further develop the 'costs of funds' approach to determine the reference rate, and further develop possible alternative approaches (vintage reference rate); and

d. Consider the financial instruments and units scope of the implicit financial services on loans and deposits.

A5.18 The recording of implicit financial services on loans and deposits, which are implicitly consumed by investment funds, but treated as being consumed by the holders of investment fund shares/units, may also need to be given further consideration.

7. Statistical units

A5.19 The rapidly changing nature of production and in particular the ways in which enterprises produce goods and services cast a spotlight on the SNA's preference to use the establishment as the preferred unit for compiling statistics on the production of goods and services, and in particular supply and use tables. There is a need for investigating this issue, to take stock of the current SNA/BPM recommendations on statistical units (including institutional units); and to reflect on whether or not the recommendations on statistical units need to be adjusted in the future. A clear view of what needs to be measured in the economy needs to be established in order to identify ways to improve the definitions, if necessary, thereby taking into consideration current country practices; regional accounts as well as productivity measurement.

8. The inclusion of international organizations

A5.20 In the SNA and BPM, international organizations are treated as units that are resident in an economic territory of their own, and not of the economy in which they are physically located (2025 SNA paragraphs 5.239 to 5.243 and BPM7 paragraphs 4.184 to 4.188). It would in principle be possible to treat international organizations as a standard subset of the rest of the world sector and indeed to compile a full set of accounts for them.

A5.21 International institutions, such as the IMF, the World Bank and the United Nations, are public corporations (and, by implication, institutional units) which are, as a rule, non-residents vis-à-vis countries, residing, as these institutions do, in the "international economic territory". Like other corporations, they use inputs to produce services, which may have a directly measured component (a fee) and an indirectly measured one. They are jointly owned by the governments of their member countries under cooperative arrangements, such as the Charter of the United Nations, or the IMF Articles of Agreement. The characterization and compilation of their output, and the use of that output by their member countries, and the recording of the remuneration of the employees of these organizations require elaboration under the current SNA/BPM guidelines. In further investigation, the cost-of-funds approach and valuation using the sum of costs method should be considered.

9. Distorted transfer pricing

A5.22 The treatment of distorted transfer pricing—which can occur between affiliated enterprises (including fellow enterprises) when observed exchange values do not represent at arm's length market prices—needs further investigation, including on how to account for sharing of IPPs and the practical aspects of making adjustments.

10. Final consumption of corporations

A5.23 In the SNA, no final consumption is recorded for corporations (with the exception of the central bank), because corporations are not considered to be final users of consumption goods and services. However, large corporations often undertake, for example, sponsorship of cultural and sporting events. To date, the SNA regards the payments involved as a form of advertising, but it could be argued that they are a form of final consumption and could thus be treated as final consumption expenditure of corporations and social transfers in kind to households. Another example relates to regulations such as environmental standards. By imposing such regulations, the government may achieve the same effect as if they levy taxes and spend the income on environmental protection, which would be treated as collective consumption. There may thus be instances where it would be more appropriate to record some expenditures by corporations as final consumption.

11. The measurement of neutral and real holding gains and losses

A5.24 The SNA recommends that the nominal holding gains and losses recorded in the revaluation account should be decomposed into neutral and real holding gains and losses. In paragraph 13.97 of the 2025 SNA, the use of a comprehensive price index covering as wide a range of goods, services and assets as possible is recommended. In this respect, it has also been argued that different price indices should be used for different classes of assets. The full impact of this suggestion requires investigation.

12. Interest rate for calculating net return to capital

A5.25 To improve the consistency in the measurement of output when using the sum of cost approach, the 2025 SNA recommends including a net return to capital in the sum of costs approach for non-market producers. By definition, the net return to capital is equal to the rate of return to capital multiplied by the value of non-financial assets used in production of non-market output. For current price estimates, nominal values (for both the rate of the return to capital and the value of non-financial assets) should be used. For volume estimates, the nominal rate of return to capital in the base period should be used, with the value of assets calculated using the prices of assets in the base period.

A5.26 Questions were raised about using a nominal interest rate as the rate of return to capital for all asset categories, particularly for assets that can easily be sold. It is also noted that neutral holding gains would be different by asset category and may also need to be considered in the calculation of the net return to capital. The resolution of these issues and its impact on the current guidance needs further investigation.

C. The Concept of income

1. Clarification of the income concept

A5.27 As discussed in paragraph 9.25 of the 2025 SNA, the concept of income in the SNA and BPM differs from the one generally understood in economics and business accounting. In particular, holding gains and losses are not considered part of income in the SNA and BPM. A thorough review of the concept of income in the SNA and BPM, including the implications for all income flows, would be beneficial.

2. Reinvested earnings

A5.28 Reinvested earnings are recorded for foreign direct investment equity in the integrated framework of the SNA/BPM, but only as supplementary items for other equity investments. Further investigation is required to test the practical feasibility of extending the treatment of reinvested earnings in the integrated framework of the SNA/BPM to all investments in equity, including portfolio investment equity and domestic equity relationships. It could also be investigated whether certain provisions can be excluded from reinvested earnings, such as mandatory, systemic provisions that are part of the core business, as is the case for banks.

3. Treatment of rent

A5.29 The 2025 SNA and BPM7 broadened the definition of rent to cover all revenues and expenditures related to putting non-produced non-financial assets (regardless of their life span) at the disposal of another institutional unit for use in production. This also includes revenues and expenditures related to obtaining observable phenomena. However, the current location of the recording of rent is still under discussion. Various options for recording the revenues and expenditures related to rent in the sequence of economic accounts are still under investigation (i.e., allocation to the earned income account, generation of earned income account, or production account).

4. Calculating real incomes

A5.30 The issue of calculating real incomes has in the past proven to be contentious, hence the fact that the SNA provide no recommendations in this regard. However, recognizing the interest in this issue, it would be helpful to develop guidance on such calculations.

D. Issues concerning financial instruments

1. Transactor vs creditor/debtor approach

A5.31 The application of the transactor vs debtor-creditor approach to identifying the counterpart to transactions has been raised in the context of consistency between the SNA and BPM. The clarification of this issue has become particularly important in the context of from-whom-to-whom matrices, which have emerged as a key analytical element in macroeconomic analysis. While the 2025 SNA and BPM7 continue to use the transactor approach as the fundamental principle in macroeconomic statistics, more research needs to be conducted to explore the options and to arrive at guidance that balances consistency, conceptual and practical considerations for the application of the transactor versus the debtor-creditor approach.

2. Loyalty programmes and gift cards

A5.32 Loyalty programmes, sponsored by various businesses, offer rewards, discounts, and other special incentives as a way to attract and retain customers. They are designed to encourage repeat business, offering people a reward (in the form of miles or points) for store/brand loyalty (hence the name). Many businesses also sell gift cards, not only to encourage and build customer loyalty, but also to further market a brand to new

potential clients. The growing variety and spread of loyalty programmes and the growing size and variety of the gift card industry suggest there is a need to comprehensively assess how to classify them and record the corresponding flows and positions in macroeconomic statistics. Besides, many loyalty programmes, especially frequent flyer and hotel reward programmes, have a mixture of resident and non-resident members. Thus, there is a need to assess the cross-border implications of transactions in these rewards on macroeconomic statistics.

3. Treatment of securities lending, gold loans, crypto lending, and similar transactions as well as their related revenues

A5.33 To achieve a conceptually sound and practically feasible treatment, the recording of securities lending, gold loans, crypto lending and similar transactions (including transactions in precious metals in general), as well as the related revenues, require further investigation. The research on this issue may also cover the recording of lent/borrowed assets in the balance sheets of institutional units involved depending on the agreed treatment of the related revenues and the classification of these units. Additionally, it may also cover the treatment of on-selling repo-ed/borrowed securities and gold, lent/borrowed crypto assets, etc., and the potential recording of negative asset positions of securities, gold, crypto assets without a corresponding liability designed to act as a medium of exchange (i.e., non-financial assets), etc. on the balance sheets. The treatment of cash collateral and other types of collateral and the recording of revenues from securities lending and gold loans should also be included in the research agenda to enable a holistic discussion on this type of revenue.

4. Valuation of unlisted equity

A5.34 Valuation based on own funds at book value (OFBV) may result in an underestimation, because the value of some intangible assets, such as brands and customer lists, may either not be recognized in business accounting standards or be valued at historic cost. Moreover, divergent national business accounting practices may lead to significant bilateral asymmetries. In addition, real estate may be undervalued if conservative appraisal methods are recommended by business accounting standards. In addition, the treatment of provisions under the OFBV method needs more research, as the OFBV method values unlisted equity based on its value in the financial statements of the enterprise, which could be affected by the recognition of provisions. The development of an enhanced OFBV method that improves the valuation of intangible assets and of real estate would better align the valuation of unlisted equity with market values.

5. Recording of unallocated gold accounts

A5.35 Paragraph 12.65 of the 2025 SNA states that unallocated gold accounts should be classified as deposits on the liability side, while paragraph 12.45 says that unallocated gold accounts with non-residents should be classified as monetary gold under reserve assets if they are under the control of the monetary authorities and meet the other criteria for reserve assets. A similar treatment is described in the BPM7. An argument for treating such unallocated gold accounts held by monetary authorities as monetary gold is that they give title to claim delivery of gold and therefore would be similar to gold bullion in practice. Conversely, as mentioned in paragraph 6.84 of the BPM7, accounts held by the monetary authorities that are only linked to the price of gold are classified as deposits. It should be noted that there is also an asymmetry for gold bullion held as reserve assets, which is only recorded as financial assets but not as liabilities, reflecting the fact that monetary gold is a special category.

A5.36 The result of the inconsistent treatment of unallocated gold accounts means that the instrument classification of unallocated gold accounts as an asset depends on its functional classification. Further investigation is required to test the feasibility of always classifying unallocated gold accounts as deposits and also as reserve assets if held by monetary authorities, but without affecting their instrument classification as deposits.

6. Negative equity positions

A5.37 The 2025 SNA and BPM7 provide conceptual guidance on the treatment of negative equity positions by allowing for the recording of negative equity positions as the default option and only change negative positions to zero in specific cases where liability is strictly limited. Further investigation is required to obtain empirical evidence on both domestic and cross-border equity relationships beyond foreign direct investment to determine the appropriate treatment.

7. Foreign direct investment statistics based on control (instead of both control and influence)

A5.38 Further research is necessary to develop a set of foreign direct investment statistics based on control relationships, rather than on both control and influence relationships. Such statistics would help with analysis of the role of foreign direct investment in globalization given the more general emphasis put on control in BPM7 and the 2025 SNA (e.g., the recommendation to increase the granularity of the institutional sector accounts and external accounts by identifying foreign-controlled non-financial and financial corporations). Such statistics could also help with the reconciliation of foreign direct investment statistics with activities of multinational enterprise (AMNE) statistics and foreign affiliate statistics (FATS).

8. Pass-through funds

A5.39 While the adoption of an internationally agreed definition and typology of SPEs assist compilers in their identification and promote cross-country comparability, it is important to monitor the evolution of these units given the changing nature of financing patterns of multinational enterprises (MNEs) and to update the definition and typology of SPEs if needed.

A5.40 In addition to SPEs, MNEs also invest via their operational subsidiaries abroad. BPM7 and BD5 propose a method to identify funds passing through the enterprise from its other business based on the residency of the ultimate controlling parent (UCP). However, more research is needed. This research could focus on a few areas. First, the development of a decision tree to identify "near-SPEs", which are entities that do not meet the definition of SPEs but that display SPE-like behaviour, such as serving as financial intermediators within the MNE group, would help compilers identify additional entities involved in pass-through activities. A second focus should be on methods to remove the "inflation" in direct investment statistics caused by pass-through funds. This includes the interpretation of the breakdown of outward positions by residency of the UCP.

A5.41 Another possibility would be the development of the "ultimate directional principle" (UDP), which would net out all pass-through funding and enable the presentation of direct investment statistics on an ultimate counterparty basis. The calculation of direct investment according to the UDP begins by determining the direction of control/influence (inward or outward) in the direct investment relationship, but this direction is determined based on the residency of the ultimate controlling parent of the immediate direct investor rather than on the residency of the immediate direct investor. It also applies to all direct investment relationships and not just to fellow enterprises.

9. Real estate investment funds

A5.42 Investment funds that own and rent out dwellings and/or commercial property are considered providers of rental and other types of real estate services in the SNA and BPM, rather than providing financial services. As providers of non-financial services, they are classified in the non-financial corporations sector, and not as financial corporations (i.e., non-MMF investment funds). On the other hand, investment funds that primarily invest in debt and equity instruments in companies that own and rent out dwellings and/or commercial property would qualify as non-MMF investment funds. This also holds for investment funds that directly invest in real estate in other economies, in which case the investments are recorded as investments in equity of notional non-resident units. This guidance regarding the classification has been questioned, and may need further consideration of all pros and cons of different ways of classifying this investment funds.

10. Corporate restructuring

A5.43 The 2025 SNA and BPM7 provide guidance on the statistical treatment of mergers and acquisitions, corporate inversions, migrations, and other types of corporate restructurings. However, additional guidance could be added to clarify the criteria for recording transactions or other changes in volume for assets and liabilities appearing and disappearing in such corporate restructurings, including harmonization of wording (also with the BD5) to ensure consistency across the macroeconomic statistical standards.

11. Household retirement resources

A5.44 The 2025 SNA recommends (paragraph 24.210) that in addition to having a supplementary table on social insurance pension schemes to also consider compiling a supplementary table on household retirement resources. Such a table would focus on resident households. Moreover, it would not only include entitlements related to social insurance, both the ones recognised and the ones not recognised in the sequence of economic accounts, but could also include other types of retirement products, such as saving accounts with or without special fiscal arrangements. It could also be extended with the value of dwellings or other accumulated wealth items, which are often used to compensate for the drop in income after retirement. The development of such a table needs further elaboration, especially in relation to arriving at a table which can provide adequate international comparisons.

E. Issues involving non-financial assets

1. Marketing assets

A5.46 While developing the 2025 SNA and BPM7, it was agreed that marketing assets should in principle be recognized as produced assets, thus significantly extending the asset (and production) boundary of the integrated framework of the SNA. This recommendation was not endorsed by the 55th session of the United Nations Statistical Commission in 2024 which requested that further research should be carried out on measuring marketing assets before this recommendation can be incorporated in the standards.

2. Recording of flows involving the harvest of biological resources by units other than the economic owner or where there is no economic ownership

A5.47 The issue of recording flows involving the harvest of biological resources by units other than the economic owner or where there is no economic ownership has been raised in the context of the treatment of household collection of firewood, household production of energy and the recording of depletion for illegal fishing.

A5.48 The underlying feature is that the economic unit undertaking the extraction of the resources (timber or fish are good examples but it may apply more broadly to, for example, hunting, non-wood forest products, etc.) is different from the economic owner of the resource and/or there is no economic ownership of the resource.

A5.49 There are a range of challenges that require further investigation to arrive at a full reconciliation between the entries in the production account, other current and accumulation accounts and the balance sheets, in such a way that where there are future economic benefits accruing to the economic unit harvesting the resources (reflected in measures of output and use), changes in the balance sheets of the resources also need to be considered.

3. Broadening the fixed asset boundary to include other intellectual property assets

Innovation

A5.51 The fixed asset boundary of the SNA includes the output of research and development (R&D) that meets the general definition of an asset. It is evident that R&D captures part, but not all, of the innovation process. It may exclude many expenditures by the production and engineering departments of an enterprise. These same

departments may also be responsible for identifying a potential new product and referring it to the R&D department to develop the science behind it. In addition, an enterprise may incur other expenditures before a new product goes to market. These may include market research to determine the demand for a new product and marketing expenditures to promote it.

Human capital

A5.52 Human input is a major input in most production processes, and the value of that input is largely dependent on the knowledge that humans bring to the production process. It is well recognized that an educated population is vital to (the sustainability of) material well-being in most countries. Even though there are major conceptual and practical problems with identifying the value of an educated labour force, there are repeated requests to address this issue within the integrated framework of the SNA.

A5.53 Following the publication of the *UNECE Guide on measuring human capital*, and experience in some countries in producing human capital measures, the question arises whether the asset boundary applied in the integrated framework of the SNA should be extended to include human capital as an asset, and how such an extension should be materialized.

4. Treatment of the atmosphere as an asset

A5.54 It is considered important to further investigate possible ways of recording the atmosphere and measuring the value of depleting the atmosphere by using it as a sink. This research may have implications for the recording of emissions and other sinks. Similarly, the recording of oceans may need further consideration.

5. Accounting for land

A5.55 A comprehensive assessment of a full accounting for land, including all changes in the value of land, would be of significant benefit. Such an assessment would consider issues such as: the link between the future rents earned on land and the market price of land, the treatment of holding gains and losses on land, the potential for recording depletion of land due to changes in its physical characteristics (e.g., soil fertility, risks of soil subsidence), the accounting for land improvements in the integrated accounts (current recorded as gross fixed capital formation) and the treatment of expenditures that are aimed at restoring the ecological condition of areas of land (e.g., restoration of riparian zones to reduce costs of sedimentation in the generation of hydropower).

A5.56 A particular issue that needs to be addressed is the term “land improvements” defined, in paragraph 11.88 of the 2025 SNA, as: “the result of actions that lead to major improvements in the quantity, quality or productivity of land, or prevent its deterioration. Activities such as land clearance, land contouring, creation of wells and watering holes that are integral to the land in question are to be treated as resulting in land improvements”. These activities listed may have a negative impact on natural resources and ecosystems. In this context, the question arises whether to classify land improvements as part of natural resources or as produced non-financial assets (excluding natural resources).

A5.57 A coherent national accounting treatment for all types of land and their values would be a significant step forward in the usefulness of national accounting for sustainability measurement and assessment.

6. Recording of the run-down of non-produced non-financial assets other than natural resources

A5.58 The SNA does not record depletion of non-produced non-financial assets other than non-produced natural resources. However, this leaves open the question of the conceptually preferred recording of the run-down of these other non-produced non-financial assets. The current guidance treats the run-down as other changes in the volume of assets. However, it is also clear that this run-down has close parallels to the depletion of natural resources or depreciation of fixed assets and could thus be looked upon as costs of production. Having

said that, there is no category for this run-down, unless one considers it as either depreciation or depletion, which need further investigation.

7. Valuables used in production

A5.59 Further guidance is required on the treatment of "valuables" primarily used in production, for example by renting them out, in which case they may need to be classified as fixed assets instead of valuables. The recording of such valuables may also bring into question the current recording of museum exhibits, as valuables.

F. Emerging issues

1. Emissions permits

A5.60 Further guidance is required on the treatment of emission permits issued freely by governments, multi-country emission permit schemes, and the typology of emission permits. The guidance needs to balance additional flexibility for economies that have much more developed emission trading schemes and limiting inconsistencies brought about by allowing different treatments which would introduce, among other issues, implications for the comparability of government debt. More importantly, the recording of emission permits also needs to be reconsidered as emissions trading schemes evolve over time, including in new ways that further impact the proposed treatment emission permits.

2. Climate offsets

A5.61 There is currently no guidance on the treatment of climate offsets, despite being used significantly and issued by government and private sector. The treatment of these climate offsets requires further investigation.

3. Classification of crypto assets without a corresponding liability designed to act as a medium of exchange

A5.62 The national accounts and balance of payments communities agreed to monitor developments relating to crypto assets without a corresponding liability designed to act as a medium of exchange, and to review the recommendation to classify them as non-produced nonfinancial assets in case there are significant market, regulatory and/or accounting changes that may justify updated guidance. The classification of crypto assets with a corresponding liability (e.g., 'stablecoins') could also be reviewed.

4. Sustainability-related data

A5.63 Environment, Social and Governance (ESG) and green financial instruments are reported separately as "of which" lines/supplementary items in the financial accounts and balance sheets in the SNA and BPM. Considering that the analysis continues to evolve, there may be scope to further develop the sustainability- and climate-related indicators and to add granularity. For example, the classification of ESG and green financial instruments should be monitored, and an internationally agreed classification of low-carbon technology products could be developed to analyse trends in global trade in these products, which is key for technology diffusion.

A5.64 Work on various environmental related classifications, such as environmental taxes and environmental subsides and a functional classification of environmental-purposed produced assets, are being undertaken in the context of the forthcoming update of SEEA and the G20 Data Gaps Initiative. The relevance of these classifications for a more granular presentation in the SNA needs to be investigated.

5. Treatment of radio spectra

A5.65 There is an apparent inconsistency between the treatment of the radio spectra as outlined in paragraphs 27.51 to 27.54 and the general principles for rights to use a natural resource outlined in paragraphs 27.16 to 27.19, noting that the treatment of radio spectra was not an issue for consideration in the update of the 2008 SNA and accordingly remains unchanged from the 2008 SNA. It also showed not to be possible to fully address this issue in the remaining time for the finalization of the SNA. Options would need to be properly considered. These may require changes to either the general principles, the treatment of the spectra, or both, and clearly any such changes would require extensive research and consultation.

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Glossary of SNA terms and definitions

Term	Alternative Term(s)	Definition	SNA Code
Account	Statement	Systematic overview grouping together related transactions, other flows, or positions. The closing balancing item often represents important macroeconomic indicators, such as value added, earned income, disposable income, and (changes in) net worth.	-
Accrual basis of recording	Accrual accounting	Recording of flows and changes in positions at the time economic value is created, transformed, exchanged, transferred or extinguished (which is not necessarily when cash or its equivalent is received or paid).	-
Accumulation of economic assets accounts	Accumulation accounts	Accounts which cover changes in assets and liabilities and changes in net worth (the difference for any institutional unit or group of units between its assets and liabilities). These accounts consist of the capital account, the financial account, the other changes in the volume of assets and liabilities account and the revaluation account. In the external accounts, the scope of accumulation accounts is limited to the financial account, the other changes in the volume of assets and liabilities account and the revaluation account as the IIP relates only to external financial assets and liabilities.	-
Acquisition approach	-	Approach for measuring interest that reflects market conditions and expectations at the time of acquisition of a debt instrument. Interest is determined using the remaining yield-to-maturity at the time the debt instrument is acquired. The effective interest rate will change only if the security is resold in the secondary market.	-
Actual collective consumption	-	The amount of consumption goods and services provided simultaneously to all members of the community or to all members of a particular section of the community. Actual collective consumption is only measured for general government, the central bank and occasionally, non-profit institutions serving households (NPISHs).	P42
Actual final consumption	-	The amount of consumption goods and services, whether individual or collective, acquired. Actual final consumption can be measured for households, general government, the central bank and non-profit institutions serving households (NPISHs).	P4

Term	Alternative Term(s)	Definition	SNA Code
Actual individual consumption	-	The amount of consumption goods or services acquired by resident institutional units for the direct satisfaction of the needs or wants of individual households. Actual individual consumption is only measured for households.	P41
Adjustment for the change in pension and non-pension entitlements	-	Adjustment required to reconcile the treatment of pensions as current transfers (social contributions and social benefits) with the treatment of pension entitlements as financial assets. It may also include a similar adjustment for non-pension schemes. After the adjustment, the saving (SNA) and current account balance (BPM) are the same as what they would have been if social contributions and benefits related to pensions (and non-pensions) would have been considered as pure financial transactions, and not recorded as current transfers.	D8
Affiliates	Affiliated entities	Enterprises in an immediate or indirect direct investment relationship with each other or that have the same immediate or indirect direct investor. Affiliates of an enterprise thus consist of its immediate or indirect direct investor(s), its immediate or indirect direct investment enterprise(s) and its fellow enterprise(s).	-
Allocated gold accounts	-	Accounts that provide ownership of a specific piece of gold.	-
American options	-	Option contracts where the buyer has the right to exercise the option at any time during the life of the contract.	-
Amortised value of a loan	-	Amount that reflects the process of gradual elimination of the liability by regular payments over a specified period of time. On the date of each scheduled payment, amortised value is the same as nominal value but it may differ from the nominal value on other dates because nominal value includes interest that has accrued and not been paid.	-
Ancillary activity	-	Supporting activity undertaken within an enterprise in order to create the conditions within which the principal or secondary activities can be carried out.	-
Ancillary corporation	-	Wholly owned subsidiary whose productive activities are confined to providing services to the parent corporation or other affiliates owned by the same parent corporation.	-

Term	Alternative Term(s)	Definition	SNA Code
Ancillary data	-	Data that is generated as an externality of production undertaken in order to create the conditions within which the principal or secondary activities can be carried out.	-
Animal resources yielding repeat products	-	Animal resources yielding repeat products whose natural growth and regeneration are under the direct control, responsibility and management of institutional units. They include breeding stocks, dairy cattle, draft animals, sheep or other animals used for wool production and animals used for transportation, racing or entertainment. Animals raised for slaughter are not included.	AN3311
Antiques and other art objects	-	Antiques, and paintings, sculptures, etc. recognized as works of art, which are not held by enterprises for sale. Museum exhibits are in principle included.	AN132
Arrears	-	Amounts that are unpaid and past the due date for payment.	-
Artificial intelligence	-	Capabilities of a computer program, or system controlled by a computer program, of recognition, reasoning, communication, and prediction emulating human recognition, reasoning, and communication.	AN11531ow2
Artificial subsidiary	-	A unit wholly owned by the parent corporation and created to provide services to the parent corporation or other corporations in the same group, often in order to avoid taxes, to minimise liabilities in the event of bankruptcy or to secure other technical advantages under the tax or corporation legislation in force in a particular country.	-
Ask price	Offer price	The lowest price at which a security or other asset is offered for sale, also known as the offer price.	-
Asset	Economic asset	A store of value representing an economic benefit or series of economic benefits accruing to the economic owner by holding or using the item over a period of time. It is a means of carrying forward value from one accounting period to another.	-
Asset boundary for fixed assets (excluding produced natural resources)	Fixed asset (excluding produced natural resources) boundary	Boundary for the recognition of produced non-financial assets in the integrated framework of national accounts, consisting of goods and services that are used in production for more than one year.	-
Asset life	Service life	Expected time over which an asset can be used in production or the expected time over which extraction from a natural resource can take place. Also known as service life or resource life.	-

Term	Alternative Term(s)	Definition	SNA Code
Asset-backed securities	-	Debt securities created through securitisation, whose payments of interest and principal are backed by payments on specified assets or income streams.	-
Associates	-	Enterprises over which the direct investor is able to exercise a significant degree of influence but not control, mainly by owning 10 per cent to 50 per cent of voting power. Associates are a subset of affiliates and could also refer to domestic relationships.	-
Auxiliary insurance services	-	Services that are closely related to insurance and pension scheme operations. Included are agents' commissions, insurance brokering and agency services, insurance and pension consultancy services, evaluation and loss adjustment services, actuarial services, salvage administration services, and regulatory and monitoring services on indemnities and recovery services.	-
Balance of earned incomes	-	Total value of the earned incomes receivable by an institutional unit or sector less the total of the earned incomes payable.	B5
Balance of payments	-	Statement that summarizes economic transactions between residents and non-residents during a specific time period. It consists of three main accounts: (i) the current account (which includes the goods and services account, the earned income account, and the transfer income account), (ii) the capital account, and (iii) the financial account.	-
Balance of the supply and use of products	-	Balance showing for any product, the sum of output at basic prices plus imports plus trade and transport margins plus taxes on products less subsidies on products; and the sum of intermediate use, final consumption, capital formation, all valued at purchasers' prices, plus exports.	-
Balance sheet	-	Statement drawn up at a particular point in time of the values of assets owned by an institutional unit or sector and of liabilities incurred by this institutional unit or sector. For the whole economy, the balance sheet shows what is often referred to as "national wealth" - the sum of non-financial assets and net claims on the rest of the world.	-

Term	Alternative Term(s)	Definition	SNA Code
Balance sheet approach	-	Approach providing a systematic analytical framework for exploring how balance sheet weaknesses contribute to macro financial vulnerabilities across institutional sectors and the rest of the world, including the origin and propagation of modern-day financial crises.	-
Balancing item	Account balance	An accounting construct obtained residually as the difference between the total value of the entries on one side of an account (credits, revenues or changes in liabilities) and the total value of the entries on the other side (debits, expenditures or changes in assets). It cannot be measured independently of the entries in the accounts.	-
Bank interest	Actual interest (relevant for BPM)	The actual interest that financial corporations charge for loans or provide for deposits, i.e., before accounting for implicit financial services on loans and deposits.	-
Banker's acceptances	Acceptances	Negotiable orders (drafts or bills of exchange) to pay a specified amount of money on a future date, accepted and guaranteed by a financial corporation, in return for a fee.	-
Barter transaction	Barter	Transaction where goods, services, or non-financial assets are exchanged for different goods, services, or non-financial assets without any accompanying monetary payment.	-
Base period	-	Reference period from which the weights are derived for the calculation of an index.	-
Basic price	-	Amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any tax payable, and plus any subsidy receivable, by the producer as a consequence of its production or sale. It excludes any transport charges invoiced separately by the producer.	-
Bermuda options	-	Contracts where the buyer has the right to exercise the option at the date of expiration and on certain specified dates during the life of the contract.	-
Bid price	-	Highest price that a buyer is willing to pay for a security or another asset.	-
Bills	Bills of exchange	Securities (usually short-term) that give holders the unconditional rights to receive stated fixed sums on a specified date.	-
Binomial-tree model	-	Options-pricing model in which it is assumed that, over any short period, a stock price will move to one of only two possible values.	-

Term	Alternative Term(s)	Definition	SNA Code
Biological resources	-	Animal resources, and tree, crop and plant resources yielding both once-only and repeat products over which ownership rights are enforced.	AN33
Biological resources yielding once-only products	-	Animal resources, and tree, crop and plant resources yielding once-only products over which ownership rights are enforced.	AN332
Biological resources yielding repeat products	-	Animal resources, and tree, crop and plant resources yielding repeat products over which ownership rights are enforced.	AN331
Black-Scholes options pricing model	-	Options-pricing model used to determine the fair price or theoretical value for a call or a put option based on volatility, type of option, underlying stock price, time, strike price and the risk-free rate.	-
Bonds and debentures	-	Debt securities that give the holders the unconditional right to fixed payments or contractually determined variable payments on a specified date or dates.	-
Book value	-	Valuation used in business accounts, generally referring to the value recorded in the enterprise's records. Book values may have different meanings because their values are influenced by the timing of acquisition, company takeovers, frequency of revaluations and tax and other regulations, including national practices.	-
Branches of non-resident corporation	-	Resident unincorporated enterprises that fully belong to a non-resident unit, known as the parent, which undertakes production of goods and services on a significant scale. It is treated as a resident quasi-corporation in the territory where it is situated.	-
Broad money	-	Sum of all liquid financial instruments held by money-holding sectors that are widely accepted in an economy as a medium of exchange, plus those that can be converted into a medium of exchange at short notice at, or close to, their full nominal value.	-
Budgetary central government	-	Part of the central government which encompasses the fundamental activities of the national executive, legislative, and judiciary powers.	-
Buildings other than dwellings	-	Whole buildings or parts of buildings not designated as dwellings (also known as residential buildings). Fixtures, facilities and equipment that are integral parts of the structures are included.	AN1121

Term	Alternative Term(s)	Definition	SNA Code
Capital account	-	Account which records acquisitions and disposals of non-financial assets as a result of transactions with other units, internal bookkeeping transactions linked to production (such as changes in inventories, depreciation and depletion) and the redistribution of wealth by means of capital transfers. In the context of the external accounts, the capital account shows (a) capital transfers receivable and payable between residents and non-residents and (b) the acquisition and disposal of non-produced, non-financial assets between residents and non-residents.	-
Capital levies	-	Taxes on the values of the assets or net worth owned by institutional units levied at irregular, and very infrequent, intervals of time.	-
Capital services	-	The sum of the net return to capital and depreciation (or depletion in the case of non-produced natural resources).	-
Capital taxes	-	Taxes charged at irregular and infrequent intervals on the values of the assets or net worth owned by institutional units or on the values of assets transferred between institutional units as a result of legacies, gifts inter vivos, or other transfers.	D91
Capital transfers	-	Unrequited transfers, either in cash or in kind, linked to the acquisition, disposal or transfer of an asset (other than cash or inventories); or where a liability is forgiven or assumed; or where the transfers are intended to address accumulated losses incurred over a multi-year period.	D9
Captive financial institutions	-	Institutional units providing financial services, where most of either their assets or liabilities are not transacted on open financial markets. They usually act as a financial agent for their affiliates, raising funds for lending to their affiliates or for purchase of their affiliates' assets.	-
Captive financial institutions and money lenders	-	Subsector of financial corporations; for more details, see the relevant components.	S1227
Cash	-	Liquid financial instruments that are widely accepted in an economy as a medium of exchange.	-
Cash basis of recording	Cash accounting	Recording of flows at the time the cash is received or disbursed.	-
Cash pooling arrangement	-	Financial arrangement where multiple bank accounts are consolidated into a single account, allowing efficient cash management, liquidity optimization, and centralized control over funds within an enterprise group.	-

Term	Alternative Term(s)	Definition	SNA Code
Cash-equivalent instruments	-	Liquid financial instruments that can be converted into a medium of exchange at short notice at, or close to, their full nominal value.	-
Catastrophic losses	-	Losses which are the result of large scale, discrete and recognizable events that may destroy a significantly large number of assets within any of the asset categories.	K3
Central bank	-	Financial institution (or institutions) that exercises control over key aspects of the financial system. Their principal functions generally include conducting monetary policy, including by issuing currency and regulating money supply and credit; managing international reserves and the payments system; promoting financial stability, including regulation and macroprudential supervision; and acting as banker to government.	S1221
Central bank digital currencies (CBDCs)	-	Digital version of the fiat currencies issued by central banks.	-
Central bank swap arrangements	-	Assets created under reciprocal facilities (swap arrangements) for the temporary exchange of deposits between the central banks of two economies. Within macroeconomic statistics these are treated as an exchange of deposits and not as financial derivatives.	-
Central clearing counterparty	-	Financial institution principally providing the clearing and settlement of transactions in securities and derivatives. Clearing relates to identifying the obligations of both parties to the transaction, while settlement is the exchange of the securities or derivatives and the corresponding payment.	-
Central government	-	Part of general government that includes all administrative departments of the national executive, legislative, and judicial functions, other central agencies and those non-market producers controlled by the central government, whose competence extends normally over the whole economic territory. All these resident units (with its territorial enclaves abroad) are included. Social security funds organized and managed by different levels of government are typically classified in a separate subsector of general government. Alternatively, social security funds that are organized and managed by the central government could be included in the central government subsector.	S1311

Term	Alternative Term(s)	Definition	SNA Code
Central Product Classification (CPC)	-	Classification based on the physical characteristics of goods or on the nature of the services rendered; each type of good or service distinguished in the CPC is defined in such a way that it is normally produced by only one activity as defined in International Standard Industrial Classification (ISIC) of All Economic Activities.	-
Centre of predominant economic interest	-	An institutional unit has a centre of predominant economic interest in an economic territory when there exists, within the economic territory, some location, dwelling, place of production or other premises on which or from which the unit engages and intends to continue engaging, either indefinitely or over a finite but long period of time, in economic activities and transactions on a significant scale. Actual or intended location for one year or more is used as an operational definition.	-
Certificates of deposit	-	Negotiable certificates issued by a bank acknowledging a deposit in that bank for a specified period of time at a specified interest rate. Certificates of deposits are generally classified as debt securities.	-
Chain indices	-	Index for a longer period of time, which is obtained by linking price (or volume) indices which use different base periods (usually linking indices with the previous period as the base period). In doing so, the short-term movements which are linked are calculated using weighting patterns which are most appropriate to the periods concerned.	-
Changes in classification	Reclassifications	Changes in assets and liabilities resulting from changes in sector classification and structure (among which changes in assets and liabilities arising from units changing their economy of residence), and those resulting from changes in the classification of assets and liabilities.	K6
Changes in inventories	-	Value of entries into inventories less the value of withdrawals and less the value of any recurrent losses of goods held in inventories during the accounting period.	P52
Changes in net worth	-	Balance of changes in the value of stocks and positions on the balance sheet, due to (i) savings and capital transfers; (ii) nominal holding gains and losses; and (iii) other changes in the volume of assets and liabilities.	B10

Term	Alternative Term(s)	Definition	SNA Code
Changes in net worth due to nominal holding gains and losses	-	Balance of changes in the value of all assets and liabilities of an institutional unit due to holding gains and losses.	B103
Changes in net worth due to other changes in the volume of assets and liabilities	-	Balance of changes in the value of stocks and positions on the balance sheet due to factors other than transactions and holding gains and losses (e.g., catastrophic losses, uncompensated seizures, and appearance and disappearance of assets and liabilities other than by transactions).	B102
Changes in net worth due to saving and capital transfers	-	Balance of changes in the value of stocks and positions on the balance sheet, due to savings and capital transfers. It also reflects the positive or negative amount available to the unit or sector for the acquisition of non-financial and financial assets.	B101
Claims of pension funds on pension sponsors	-	Claims of defined benefit pension funds on their sponsors to cover any shortfalls on the value of accumulated assets compared with the pension liabilities of the fund, which are also the pension entitlements of households. In the case of a surpluses, the claims are recorded as negative assets of the pension fund.	AF64
Classification of Individual Consumption by Purpose (COICOP)	-	Classification based on the purpose of the goods and services, used for classifying both individual consumption expenditure and actual individual consumption.	-
Classification of Outlays of Producers by Purpose (COPP)	-	Classification based on the purpose of outlays of producers, used for classifying expenditures by producers (intermediate consumption, remuneration of employees, etc.).	-
Classification of the Functions of Government (COFOG)	-	Classification based on the socio-economic objectives of government functions, used for classifying expenditures by general government and its sub-sectors.	-
Classification of the Purposes of Non-profit Institutions (COPNI)	-	Classification based on socio-economic objectives, used to classify current transactions, capital outlays and acquisition of financial assets by non-profit institutions serving households.	-
Clean price	-	Market price of a debt security excluding the accrued interest not yet payable between coupon dates.	-
Co-circulation	-	Use of a foreign currency as a generally accepted medium of exchange in the economic territory, in parallel with the domestic currency.	-

Term	Alternative Term(s)	Definition	SNA Code
Collateralized debt obligations	-	Debt securities created through securitisation, whose payments of interest and principal are dependent on payments of a pool of loan and bond instruments, either purchased in the secondary market or from the balance sheet of a commercial bank.	-
Collateralized mortgage obligations	-	Debt securities created through securitisation, whose payments of interest and principal are dependent on payments of a pool of mortgage loans.	-
Collective consumption expenditure	-	Expenditure on services provided simultaneously to all members of the community or to all members of a particular section of the community. Collective final consumption expenditure is only measured for general government, the central bank and occasionally, non-profit institutions serving households (NPISHs).	P32
Collective consumption service	-	Service provided simultaneously to all members of the community or to all members of a particular section of the community such as all households living in a particular region.	-
Commercial paper	-	Discounted and unsecured debt security issued by a corporation that promises to pay to the holder a certain amount on a stated maturity date.	-
Commitments basis of recording	Commitments-based accounting	Recording of flows at the time when an institutional unit has committed itself to a transaction.	-
Compensation payments	-	Transfers paid by institutional units to other institutional units in compensation for injury to persons, damage to property or other losses (usually caused by the former) that are not settled as payments of non-life insurance claims.	-
Compulsory transactions	-	Payments required by government, courts of law, or quasi-judicial processes which relate to activities, goods, or assets not owned by the government, courts, or quasi-judicial institutions.	-
Computer software, data and databases	-	Non-financial asset category, grouping together computer software, including artificial intelligence; and data and databases, that are used in production for more than one year.	AN1153
Computer software, including artificial intelligence systems	Computer software	Computer programs, program descriptions, and supporting materials for both systems and applications software that are expected to be used in production for more than one year. It also includes artificial intelligence systems.	AN11531

Term	Alternative Term(s)	Definition	SNA Code
Concessional loans	-	Loans intentionally provided at a contractual interest rate below market interest rates, for similar grace and repayment periods as equivalent market loans, with the purpose to convey a benefit, occurring in a non-commercial context.	-
Conduit	-	Unit that principally raises funds on open financial markets for passing on to other affiliated enterprises. Conduits are a subset of captive financial institutions.	-
Consolidated financial statements	-	Statements in which the assets, liabilities, net worth, revenue, expenses and cash flows of a controlling entity and its controlled entities are presented as those of a single economic entity.	-
Consolidation	-	Elimination of stocks and flows that occur between institutional units that are grouped together for statistical purposes and presented as if they constituted a single unit	-
Constructive liabilities	-	Obligations established not by contract but by long and well-recognized custom that is not easily refuted. In these cases, the creditor has a valid expectation of payment, despite the lack of a legally binding contract. Generally, these obligations are not recognized as financial assets and liabilities.	-
Consumer durables	-	Goods acquired by households which are used for purposes of consumption repeatedly or continuously over a period of a year or more, like vehicles, furniture or electrical equipment. They are used for consumption (final consumption expenditure) and not for production (fixed assets).	-
Consumer price index	-	Index of the prices of consumption goods and services, as compared to a certain reference period (t=100).	-
Consumption good or service	-	A good or service that is used (without further transformation in production as defined in the integrated framework of the SNA) by households, government units, the central bank and non-profit institutions serving households (NPISHs) for the direct satisfaction of individual needs (or wants) or for the collective needs of members of the community.	-
Consumption of goods and services	-	The act of completely using up the goods and services in a process of production or for the direct satisfaction of human needs or wants.	-

Term	Alternative Term(s)	Definition	SNA Code
Contingent assets and liabilities	-	Possible obligations (and corresponding claims) whereby one party is obliged to provide payment to another unit only if certain specific conditions prevail. As they are not unconditional obligations, they are not recognized as financial assets or liabilities, with the exception of standardized guarantees. Contingent assets and liabilities can be explicit (based on legal obligations) or implicit (not based on legal obligations).	-
Contracts	-	Agreements between two or more parties that create enforceable rights and obligations.	-
Contracts, leases and licences	-	Non-produced assets where one party to a contract, lease or license is able legally and practically to realize the price difference between the market price for the use of an asset or the provision of a service, and the price specified in the contract, lease or license. Non-fungible tokens that grant limited ownership rights are also included.	AN21
Control of a corporation	-	Ability to determine general corporate policy of a corporation, where general corporate policy is understood in a broad sense to mean the key financial and operating policies relating to the corporation's strategic objectives as a market producer. In practice, control is determined to exist if an investor has more than 50 percent of the voting power in an enterprise. The control may be direct (through ownership of voting power or other arrangements) or indirect (through ownership of enterprises that in turn have voting power). In the case of control by government, or another public unit, control can also be exercised in other ways than owning more than half of the voting power.	-
Control of a non-profit institution	-	Ability to determine general policy or program of the non-profit institution, where general policy or program is understood in a broad sense to refer to the constitution, articles of association, or other enabling instruments that dictate the parameters under which a non-profit institution may operate and the related financial risks to which it is exposed.	-
Corporate inversion	-	The corporate restructuring of a multinational enterprise group such that the original ultimate controlling parent company in one economy becomes a subsidiary of the new parent in another economy. In addition, ownership of a group of enterprises may be shifted to the new parent company.	-

Term	Alternative Term(s)	Definition	SNA Code
Corporations	-	Institutional units, mainly consisting of independent legally constituted corporations and also cooperatives, limited liability partnerships, notional resident units and quasi-corporations, whose principal activities are to produce goods or services for the market.	-
Cost, insurance, and freight (CIF) basis	-	Valuation basis where goods are valued at the importer's border—that is, including the cost of insurance and freight incurred up to the point of the goods entering the economy of the importer.	-
Costs of ownership transfer	-	Costs associated with acquiring and disposing of non-financial assets (other than inventories).	AN116+AN35
Coupon rate	Coupon	The rate of interest payable by a debt security issuer to the holder on the security's face value.	-
Credit default swap	-	Financial derivative contract in which the seller compensates the buyer in the event of a default of the underlying instrument.	-
Credit derivatives	-	Financial derivatives whose primary purpose is to trade credit risk.	AF715
Credit risk	-	The risk that one party to a financial instrument will cause a financial loss for the other party by failing to discharge an obligation.	-
Credit-linked notes	-	Debt securities backed by reference assets such as loans and bonds, with an embedded credit default swap allowing credit risk to be transferred from the issuer to investors.	-
Creditor approach	-	With respect to calculating the interest yield on debt securities, this approach is the perspective of the unit holding the security. Under this approach, the effective yield used to compute accrued interest on debt securities is recalculated in each period to reflect current market rates.	-
Cross-currency interest rate swaps	-	Contracts that involve an exchange of cash flows related to interest payments and an exchange of principal amounts at an agreed exchange rate at the end of the contract.	-
Crypto assets (fungible and non-fungible)	-	Digital representations of value that use cryptography and distributed ledger technology such as blockchains to enable parties to transact directly with each other without the need for a trusted intermediary. Two types of crypto assets are distinguished--fungible and non-fungible. Fungible crypto assets are divisible and not unique, and non-fungible crypto assets (most commonly known as non-fungible tokens or NFTs) are unique and non-divisible.	-

Term	Alternative Term(s)	Definition	SNA Code
Crypto assets with a corresponding liability designed to act as a medium of exchange within a platform	-	Fungible crypto assets that act as a medium of exchange within a platform. They are classified as a separate sub-category under debt securities.	AF33+AF34
Crypto assets without a corresponding liability designed to act as a medium of exchange	-	Crypto assets for which there is no claim on the issuer. They may be designed to act as a general medium of exchange, or designed to act as medium of exchange within a platform only.	AN22
Cultivated biological resources yielding once-only products	-	Animal resources, and tree, crop and plant resources that yield once-only products over which ownership rights, in some cases collectively by government, are enforced, and for which natural growth or regeneration is under the direct control, responsibility and management of institutional units. Work-in-progress on cultivated biological resources is classified in a separate category.	AN3321
Currency	-	Notes and coins (including digital versions) that are of fixed nominal values and are issued or authorised by the central bank or government.	AF21
Currency board	-	Independent monetary authority that issues national currency that is fully backed by foreign exchange reserves.	-
Currency of denomination	-	The currency in which the value of flows and positions is fixed as specified in a contract between parties. It may be different from the currency of settlement.	-
Currency of settlement	-	The currency in which a payment is to be made. It may be different from the currency of denomination.	-
Currency options	-	Contracts that give the buyer the right (but not the obligation) to purchase or sell a currency at an agreed exchange rate at or by a specified date.	-
Currency union	-	A group of economies that adopts a common currency and has a central decision-making body (usually a currency union central bank) with the authority to issue the legal tender of the area and conduct a single monetary policy.	-
Currency union - centralised	-	Currency union that has a central bank owned by the governments of the member economies with the common currency issued by this central bank and central bank operations in each economy carried out by branches or agencies of the currency union central bank. See also *currency union - decentralised*.	-

Term	Alternative Term(s)	Definition	SNA Code
Currency union - decentralised	-	A group of economies with a currency union central bank and national central banks of the member economies with the former being owned by the latter. The monetary policy decisions are taken by the decision-making body of the currency union central bank, which also coordinates the implementation of the decisions, a primary responsibility of the national central banks. See also *currency union - centralised*.	-
Currency union central bank	-	Financial institution that acts as a central bank for the member countries of a currency union.	-
Current account	-	Account that covers the transactions in goods, services, earned income and transfer income between institutional units. In the external accounts, it relates to the relevant transactions between residents and non-residents.	-
Current account balance	Current external balance	Balance of current transactions (transactions in goods and services, earned income and transfer income) between residents and non-residents. The term *current account balance* is used in the external accounts and is expressed from the perspective of resident units. The term *current external balance* is used in the national accounts and is expressed from the perspective of the non-resident units, and therefore with the opposite sign.	B12
Current international cooperation	-	Current transfers in cash or in kind between the governments of different countries or between governments and international organisations.	D74
Current replacement cost	Current cost accounting	Valuation method also known as current cost accounting. This reflects the cost the unit would incur to acquire the assets and goods and services used in production at their actual or estimated current market prices at the time the production takes place.	-
Current taxes on capital	-	Taxes that are payable periodically, usually annually, on the property or net wealth of institutional units, excluding taxes on land or other assets owned or rented by enterprises and used by them for production since such taxes are treated as other taxes on production.	-

Term	Alternative Term(s)	Definition	SNA Code
Current taxes on income, wealth, etc.	-	Taxes which mainly consist of taxes on the incomes of households or profits of corporations and of taxes on wealth that are payable regularly every tax period (as distinct from capital taxes levied infrequently). In the external accounts, current taxes on income, wealth, etc., consist mainly of taxes levied on the income earned by non-residents from the provision of their labour or financial assets.	D5
Current transfers	-	Unrequited transactions between two parties where one party provides a good, service or cash to the other party, with no expectation of anything of economic value in exchange. Unlike capital transfers, they are not linked to the acquisition or disposal of an asset, either financial or non-financial (other than cash and inventories).	D5 + D6 + D7
Current transfers within government	-	Current transfers between different government units, such as frequently occur between central and state or local government units, and between general government and social security funds	D73
Customs union	-	A group of economies that share a common tariff (custom duties) vis-à-vis the non-member economies while the movement of goods within the customs union tends to be duty free.	-
Data	-	Information content that is produced by accessing and observing phenomena, and recording and storing information elements from these phenomena in a digital format, which provide an economic benefit when used in productive activities. Data as an asset is data used in production for more than one year.	-
Data and databases	-	Electronic files of data, including the information content (i.e., the data themselves), organised in such a way as to permit resource-effective access and use of the data, either for own use in production for more than one year, or for sale as an item or for sale by means of a license to access the information contained	AN11532
Databases	-	Electronic files of data organised in such a way as to permit resource-effective access and use of the data, either for own use in production for more than one year, or for sale as an item or for sale by means of a license to access the information contained.	-

Term	Alternative Term(s)	Definition	SNA Code
Debt assumption	-	A trilateral agreement between a creditor, a former debtor, and a new debtor, under which the new debtor assumes the former debtor's outstanding liability to the creditor, and is liable for repayment of debt.	-
Debt conversion (swap)	-	An exchange of debt (typically at a discount) for a non-debt claim such as equity, or for counterpart funds that can be used to finance a particular project or policy.	-
Debt defeasance	-	Arrangement that allows a debtor (whose debts are in the form generally of debt securities and loans) to remove certain liabilities from the balance sheet by pairing them, irrevocably, with assets of equal value to the liabilities.	-
Debt discount	-	Discount on the face value of a debt security (value below par). This occurs when market interest rates are higher than the debt security's coupon rate at the time of issuance.	-
Debt forgiveness	Debt cancellation by mutual agreement	Voluntary cancellation of all or part of a debt obligation within a contractual agreement between a creditor and a debtor. In contrast to debt write-offs, debt forgiveness arises from an agreement between the parties to the debt with the intention to convey a benefit to the debtor, rather than unilateral recognition by the creditor for amounts that they no longer expect to collect.	D93
Debt instruments	-	Financial instruments that require the payment of principal and/or interest at some point(s) in the future. Debt instruments consist of SDRs, currency and deposits, debt securities, loans, insurance technical reserves, pension and related entitlements, provision for calls under standardized guarantees, and other accounts receivable/payable. In the external accounts, trade credit and advances are in a separate category from other accounts receivable/payable and are also included in debt instruments.	-
Debt payments on behalf of others	-	Arrangement in which, rather than assuming the debt, a government may decide to repay a specific borrowing or make a specific payment on behalf of another institutional unit, without the guarantee being called or the debt being taken over.	-
Debt premium	-	Premium on the face value of a debt security (value above par). This occurs when market interest rates are lower than the debt security's coupon rate at the time of issuance.	-

Term	Alternative Term(s)	Definition	SNA Code
Debt prepayments	-	Repurchases, or early payments, of debt at conditions that are agreed between the debtor and the creditor; that is, debt is extinguished in return for a cash payment agreed between the debtor and the creditor.	-
Debt refinancing	-	Arrangement that involves the replacement of an existing debt instrument or instruments, including any arrears, with a new debt instrument or instruments.	-
Debt reorganisation	Debt restructuring	Arrangement that involves both the creditor and the debtor (and sometimes third parties) in altering the terms established for servicing an existing debt.	-
Debt repudiation	Unilateral debt cancellation	Unilateral cancellation of a financial claim by a debtor, which is not recognised in macroeconomic statistics.	-
Debt rescheduling	-	Arrangement that involves the formal deferment of debt service payments and the application of new and generally extended maturities to the deferred amounts.	-
Debt securities	-	Negotiable instruments serving as evidence of a debt. They include bills, bonds, notes, negotiable certificates of deposit, commercial papers, debentures, asset-backed securities and similar instruments normally traded in financial markets.	AF3
Debtor approach	-	With respect to calculating the interest yield on debt securities, this approach follows the perspective of the unit issuing a security. Under this approach, interest is equal to the amounts the debtor will have to pay to their creditors over and above the repayment of the amounts advanced by the original creditors. Interest accrual on a debt instrument is determined for the entire life of the instrument by the conditions set at its inception.	-
Decommissioning costs	-	Expenditures related to the disposal of an asset (e.g., the decommissioning of nuclear power stations, oil riggs, or the clean-up costs of landfill sites).	-
Deductible value added tax	-	Value added tax (VAT) payable on purchases of goods or services intended for intermediate consumption, gross fixed capital formation or for resale that a producer is permitted to deduct from his own VAT liability to the government in respect of VAT invoiced to his customers.	-
Deep-discount bonds	-	Debt securities that have small or no coupon payments and are issued at a considerable discount to their face value.	-

Term	Alternative Term(s)	Definition	SNA Code
Defined benefit pension schemes	-	Pension schemes where the benefits payable to an employee, or a self-employed person, on retirement are determined by an actuarial formula related to the participant's length of service and income, either alone or as a minimum amount payable.	S1229S1
Defined contribution pension schemes	-	Pension schemes where the benefits payable to an employee, or self-employed person, on retirement are defined exclusively in terms of the level of the funds built up from the contributions made over the working life and the increases in value that result from the investment of these funds by the manager of the scheme.	S1229S2
Degradation	-	Changes in the capacity of environmental assets to deliver a broad range of ecosystem services and the extent to which this capacity may be reduced through the action of economic units, including households.	-
Depletion	-	In physical terms, the decrease in the quantity of the stock of a non-produced natural resource over an accounting period that is due to the extraction of the natural resource by economic units occurring at a level greater than that of its growth. In monetary terms, it corresponds with the decline in future economic benefits, due to extraction in excess of its growth, that can be earned from a resource, the value of which is based on the physical - flows of depletion using the price of the natural resource in situ.	P8 (=NF35)
Depository receipts	-	Financial instruments that allow a non-resident institutional unit to introduce its equity or debt into another market in a form more readily acceptable to the investors in that market. Depository receipts are classified according to the underlying financial instruments backing them.	-
Deposits	-	Non-negotiable contracts that represent the placements of funds available for later withdrawal. They are claims on the central bank, other deposit-taking corporations, other financial corporations, and, in some cases, other institutional units.	AF23 + AF29
Deposit-taking corporations except central bank	-	Institutional units principally engaged in financial intermediation, whose business is to receive deposits and/or close substitutes for deposits from institutional units, and, on their own account, to extend credit and/or to make investments in other financial instruments.	S1222

Term	Alternative Term(s)	Definition	SNA Code
Depreciation	-	Decline, during the course of the accounting period, in the current value of the stock of fixed assets, including produced natural resources, owned and used by a producer as a result of physical deterioration, normal obsolescence or normal accidental damage.	P51d
Depreciation profile	-	Profile for determining depreciation pattern of a non-financial asset used in production. One of the following two approaches is often applied: geometric depreciation profile based on the efficiency and rentals of a fixed asset declining at a constant geometric rate from period to period (preferred approach); and a straight-line depreciation profile based on a constant annual amount of depreciation over the life of the asset.	-
Digital assets (designed to act as a medium of exchange or financial instrument)	-	Digital representations of value recorded on a cryptographically secured distributed ledger or using a similar technology, or issued by a central bank as central bank digital currency.	-
Digital platforms	-	Platforms that facilitate interactions via the internet between two or more distinct but interdependent sets of users (either firms or individuals). Four types of digital platforms are distinguished: i) non-financial digital intermediation platforms; ii) free digital platforms; iii) financial digital platforms; and iv) other fee-based digital platforms.	-
Direct insurance	-	Insurance where a policy is issued by an insurance corporation to another type of institutional unit, to be clearly distinguished from reinsurance. There are two main types of direct insurance: life insurance and non-life insurance.	-
Dirty price	-	Market price of a debt security that includes interest that has accrued but is not yet payable due to coupon.	-
Discount rate	-	Rate used to determine the value of an asset, or liability, by discounting the future cash flows (receipts and/or payments).	-
Disposable income	-	Income available for final consumption expenditure or saving.	B6
Disposable income adjusted for social transfers in kind	Adjusted disposable income	Income available for actual final consumption or saving. It is equal to disposable income, plus social transfers in kind receivable and less social transfers in kind payable.	B7

Term	Alternative Term(s)	Definition	SNA Code
Distributable income of a corporation	-	Entrepreneurial income, plus all current transfers receivable, less all current transfers payable and less the adjustment for the change in pension and non-pension entitlements relating to the pension or other social insurance scheme of that corporation.	-
Distribution margin	Trade margin	Difference between the actual (or imputed) price realised on a good purchased for resale and the price that would have to be paid by the distributor to replace the good at the time it is sold or otherwise disposed of.	-
Distributive transactions	-	Transactions covering how value added generated by production is distributed to labour, capital and government, and transactions involving the redistribution of income and wealth through taxes and other transfers.	-
Dividends	-	Earnings distributed to the owners of corporate equity for placing funds at the disposal of corporations.	D4121
Divisia money	-	Quantity index measuring the change of quantity of money between two time periods by assigning different weights to the growth rates of different money components, according to the usefulness of each component for transaction purposes.	-
Dollarization	-	Unilateral adoption of a foreign currency by third-party economies (e.g., U.S. dollar or some other foreign currency) as legal tender.	-
Domestic currency	Local currency	Legal tender in the economy which is issued by the monetary authority for that economy. That is, either that of an individual economy or, in a currency union, that of the common currency area to which the economy belongs.	-
Domestic economy	Total economy	The entire set of resident institutional units.	S1
Domestic enterprise group	Local enterprise group	Parent corporation and the legal entities controlled by that parent which are resident in the reporting economy.	-
Double deflation	-	Method whereby the volume estimates of gross value added are measured by subtracting the volume estimates of intermediate consumption from the volume estimates of output. This method is feasible only for volume estimates which are additive, such as those calculated using a Laspeyres' formula (either fixed base or for estimates expressed in the previous year's prices).	-
Due-for-payment basis of recording	Due-for-payment accounting	Recording of flows at the time that the payments fall due or if a payment is made before it is due, when the cash payment is made.	-

Term	Alternative Term(s)	Definition	SNA Code
Dwellings	Residential buildings	Buildings, or designated parts of buildings, that are used entirely or primarily as residences, including any associated structures, such as garages, and all permanent fixtures customarily installed in residences.	AN111
Earned income	-	Incomes earned by institutional units as a consequence of their involvement in processes of production or ownership of assets that may be needed for purposes of production.	-
Earned income account	-	Account that records income flows earned by institutional units as a consequence of their involvement in processes of production or ownership of assets that may be needed for purposes of production.	-
Economic activities	-	Activities covering production and consumption of goods and services, distribution and redistribution of income, and accumulation of economic assets.	-
Economic appearance of assets	-	Appearance of assets which is neither due to transactions nor due to holding gains and losses (revaluations). Examples relate to the recognition of produced assets, not previously recognised as assets; discoveries of natural resources; changes in the quality of land; the recognition of goodwill in the purchase of a corporation; and the initiation of contracts, leases and licenses.	K1
Economic benefits	-	Gains arising from the economic activities of production, consumption or accumulation.	-
Economic capital	-	The stock of economic assets that are created through the direct involvement of economic units and which are under the control of an institutional unit, either individually or collectively.	-
Economic disappearance of assets and liabilities	-	Disappearance of assets and liabilities which is neither due to transactions nor due to holding gains and losses (revaluations). Examples relate to the cancellation of contracts, leases and licenses; and the unilateral cancellation or write-offs of debt.	K2
Economic owner	-	The institutional unit that is entitled to claim the economic benefits associated with the use of goods, services, natural resources, and financial assets in the course of an economic activity, and that is accepting the associated risks.	-

Term	Alternative Term(s)	Definition	SNA Code
Economic territory	-	A geographic area under the effective economic control of a single government or a currency union or economic union. In its broadest sense, an economic territory can be any geographic area or jurisdiction for which statistics are required. For a country, it includes the land area, airspace, territorial waters, islands that belong to the territory and territorial enclaves in the rest of the world.	-
Economic union	-	A group of economies established by means of an intergovernmental legal agreement among sovereign countries or jurisdictions with the intention of fostering greater economic integration.	-
Economically significant prices	-	Prices that have a significant effect on the amounts that producers are willing to supply and on the amounts purchasers wish to buy.	-
Ecosystem assets	-	Contiguous spaces of a specific ecosystem type characterized by a distinct set of biotic and abiotic components and their interactions. Ecosystem assets are not explicitly recognised as economic assets in the integrated framework of national accounts.	AN4X
Electric powered transport equipment	-	Transport equipment powered by electricity without the use or back-up of a fossil fuel powered motor.	AN1131ow1
Electronic money	-	Monetary value stored electronically, which represents a claim on the issuer. Electronic money must represent general purchasing power, i.e., it should be widely used as a medium of exchange.	-
Embedded derivatives	-	Financial instruments that contain a derivative feature, which is inseparable from the non-derivative host instrument.	-
Emission permits	-	Permits to emit harmful substances to the atmosphere, land or water. They are recorded as financial assets (other accounts receivable/payable), with the taxes on production recorded at surrender, valued at issuance prices.	AF82
Emissions	-	Substances released to the environment by enterprises, households, government and other units a result of production, consumption and accumulation processes.	-
Employee stock options	-	Options to buy the equity of a company at a discount to the market value, offered to employees of the company as a form of remuneration.	AF72

Term	Alternative Term(s)	Definition	SNA Code
Employees	-	Persons who, by agreement, work for a resident institutional unit and receive remuneration for their labour. A resident institutional unit may employ both resident and non-resident persons.	-
Employers' social contributions	-	Actual and imputed social contributions payable by employers to social security funds and other social insurance schemes, to secure social benefits for their employees.	D12 = D611 + D612
Encumbered assets	-	Assets that the holder is restricted or prevented from liquidating, selling, transferring or assigning due to legal, regulatory, contractual or other limitations.	-
Enterprise	-	An institutional unit engaged in the production of goods and/or services. The term enterprise may refer to a corporation, a quasi-corporation, a non-profit institution (NPI), or an unincorporated enterprise.	-
Entertainment, literary or artistic originals	-	Original films, series and other visual recordings, sound recordings, games, manuscripts, tapes, models, etc., on which entertainment, literary and artistic output, etc., are recorded or embodied.	AN1154
Entitlement to future goods and services on an exclusive basis	-	Arrangements where one party, which has contracted to purchase goods or services at a fixed price at a time in the future, is able to transfer the obligation of the second party to the contract to a third party.	AN213
Entitlements to non-pension benefits	Entitlements to non-pension social insurance benefits	Excess of net social contributions over social benefits, representing an increase in the liability of a non-pension related social insurance scheme towards the beneficiaries.	AF65
Entrepreneurial income	-	Income earned by corporations from the production of goods and services, plus property income receivable, minus property income payable (excluding dividends, withdrawals of income of quasi-corporations and reinvested earnings).	B4
Environmental assets	-	Naturally occurring living and non-living components of the Earth, together constituting the biophysical environment, which may provide benefits to humanity. In macroeconomic statistics, environmental assets are only recognised in as far they meet the asset boundary applied in the integrated framework of the SNA, by providing economic benefits to their owners, either individually or collectively.	-
Environmental protection activities	-	Activities whose primary purpose is the prevention, reduction and elimination of pollution and other forms of degradation of the environment.	-

Term	Alternative Term(s)	Definition	SNA Code
Environmental specific services	-	Environmental protection and resource management services produced by economic units for sale or own use.	-
Environmental subsidies	-	Subsidies intended to support activities that protect or restore the environment more generally, to enhance the capability of ecosystems, or to reduce the use and extraction of natural resources.	D3ow
Environmental taxes	-	Taxes whose tax base is a physical unit (or a proxy of it) of something that has a proven, specific, negative impact on the environment.	D2ow
Equity	-	All instruments and records acknowledging ownership rights and claims on the residual value of a corporation or quasi-corporation after the claims of all creditors have been met. Ownership of equity is usually evidenced by shares, stocks, participations, depository receipts or similar documents.	AF51
Equity and investment fund shares/shares	-	Residual claims on the assets of the institutional units that issued the relevant instruments.	AF5
ESG debt securities	-	Debt securities where the use of proceeds is restricted to financing or refinancing activities or projects that improve the condition of the environment or society or governance practices, or where the issuer agrees to achieve performance objectives that improve the condition of the environment or society or government practices. These include green debt securities, social debt securities, sustainability debt securities, sustainability-linked debt securities, and other ESG debt securities.	AF3ow1
ESG equity	-	Equity investments by investors in institutional units in which 50 per cent or more of the institutional unit's revenue comes from activities that improve the condition of the environment or society or governance practices.	AF51ow1
ESG finance	-	Finance for activities or projects that sustain or improve the condition of the environment or society or governance practices.	-
ESG investment fund shares/units	-	Shares or units in investment funds investing in financial instruments, companies, projects or other funds that intend to achieve performance objectives that improve the condition of the environment or society or governance practices.	AF52ow1

Term	Alternative Term(s)	Definition	SNA Code
ESG loans	-	Loans in which 50 per cent or more of the debtor's activities improve the condition of the environment or society or governance practices. In the case of business loans, the debtor's activities would be reflected in the business's revenue, while in the case of loans to households, they would depend on the use of the loan proceeds.	AF4ow1
Establishment	Local kind-of-activity unit	Enterprise, or part of an enterprise, that is situated in a single location and in which only a single productive activity is carried out or in which the principal productive activity accounts for most of the value added (also known as local kind-of-activity unit).	-
European options	-	Options where the buyer has the right to exercise the option only at the expiration of the contract.	-
Ex dividend	-	The point at which the shares no longer carry the right to the most recently declared dividend. Thus the dividend value becomes separated from the share price value and the share price falls to reflect the value of the dividend payout.	-
Exchange rate	-	Price of one country's currency in relation to another country's currency.	-
Exchange rate changes	-	All changes in value resulting from exposure to the effect of exchange rates. Part of revaluations along with other price changes.	-
Exchange values	-	Values at which goods, services, labour or assets are exchanged or else could be exchanged for cash. Exchange values, or market prices, are the basis for the valuation of transactions in macroeconomic statistics.	-
Excise duties	Excises	Taxes levied as a product specific unit tax on a predefined limited range of goods.	-
Existing fixed assets	-	Non-financial assets whose value was included in the stock of fixed capital of at least one producer unit in the domestic economy at some earlier point in time.	-
Expenditures	-	Transactions that reduce the amount of economic value of a unit or sector	-
Expenditures on goods and services	-	Values of the amounts that buyers pay, or agree to pay, to sellers in exchange for goods or services that sellers provide to them or to other institutional units designated by the buyers.	-
Export subsidies	-	Subsidies on goods or services that are payable by government when the goods leave the economic territory or when the services are delivered to non-resident units.	D312

Term	Alternative Term(s)	Definition	SNA Code
Export taxes	-	Taxes on goods or services that become payable to government when the goods leave the economic territory or when the services are delivered to non-residents.	D213
Exports	-	Changes in the economic ownership of goods from residents of the compiling economy to non-residents, as well as services provided by residents of the compiling economy to non-residents.	P6
Exports of goods	-	Changes in the economic ownership of goods from residents of the compiling economy to non-residents, irrespective of physical movement of goods across national borders.	P61
Exports of services	-	Services provided by residents of the compiling economy to non-residents.	P62
External accounts	-	Summary overview of the economic relationships between residents of an economy and non-residents. They comprise three interconnected elements: a) the international investment position; b) the balance of payments; and c) the other changes in financial assets and liabilities accounts.	-
External balance of international trade in goods and services	-	Difference between the exports and imports of goods and services.	B11
External sector statistics	-	Datasets related to the external accounts, including the balance of payments, the integrated international investment position, external debt statistics, international reserves and foreign currency liquidity, the Coordinated Direct Investment Survey, the Coordinated Portfolio Investment Survey, etc.	-
Extrabudgetary units	-	General government units with individual budgets not fully covered by the main (or general) budget. These entities operate under the authority or control of a central, state, or local government. Extrabudgetary entities may have their own revenue sources, which may be supplemented by grants (transfers) from the general budget or from other sources.	-
Face value	-	Valuation that reflects the undiscounted amount to be paid to the holder of a financial instrument at maturity, also known as “par value” or simply “par”.	-

Term	Alternative Term(s)	Definition	SNA Code
Factoring	-	Transaction in which a financial corporation (factor, which can be a bank, a specialized factoring company or other financial organization) buys trade accounts receivable from a supplier of goods and services at a discount. Two basic types of factoring are differentiated: recourse and non-recourse factoring. In non-recourse factoring, the factor assumes the full risk of non-payment by the debtors at maturity and therefore charges the supplier a higher percentage of the receivables ("discount") than in recourse factoring where all or part of the risk is kept by the supplier (recourse factoring).	-
Factoryless goods producer	-	A principal that controls the production of a good by undertaking the entrepreneurial steps and providing the technical specifications required to produce the good, but that outsources all or most of the material transformation process required to produce the output.	-
Fair value	-	Valuation that reflects the market-equivalent value of an asset or liability. It is defined as the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction.	-
Fellow enterprises	-	Enterprises under the control or influence, either directly or indirectly, of the same direct investor, but neither of the enterprises controls or influences the other enterprise.	-
Final consumption expenditure	Final consumption	The amount of expenditure on consumption goods and services, whether individual or collective. Final consumption expenditure can be measured for households, general government, the central bank and non-profit institutions serving households (NPISHs).	P3
Finance lease	Financial lease	Contract between a lessor and a lessee, under which the lessor, as legal owner of an asset, substantially conveys the risks and rewards of ownership of the asset to the lessee. The lessee, therefore, becomes the economic owner of the asset. A finance lease involves imputing a loan.	-
Financial account	-	Account which records all transactions in financial assets and liabilities. In the external accounts, only transactions between residents and non-residents are included.	-
Financial assets	-	Financial claims and gold bullion held by monetary authorities as a reserve asset.	-

Term	Alternative Term(s)	Definition	SNA Code
Financial auxiliaries	-	Financial corporations principally engaged in activities associated with transactions in financial assets and liabilities or with providing the regulatory context for these transactions but that do not involve the auxiliary taking ownership of the financial assets and liabilities being transacted.	S1226
Financial claims	-	Financial instruments that give rise to an economic asset that has a counterpart liability, including shares and other equity in corporations.	-
Financial corporations	Financial institutions	Institutional units whose principal activity is the production of financial services.	S12
Financial derivatives	-	Negotiable financial instruments linked to another specific financial instrument, indicator, or commodity, through which specific risks (e.g., interest rate risk, foreign exchange risk, equity and commodity price risk, credit risk) can be traded in their own right in financial markets.	AF71
Financial instruments	-	The full range of financial contracts made between institutional units. They may be recorded on the balance sheet or off the balance sheet (e.g., constructive and contingent assets and liabilities).	-
Financial intermediaries	-	Financial corporations that incur liabilities on their own account for the purpose of acquiring financial assets by engaging in financial transactions on the market.	-
Financial intermediation	-	Productive activity in which an institutional unit incurs liabilities on its own account for the purpose of acquiring financial assets by engaging in financial transactions on the market.	-
Financial services	-	Services related to financial intermediation, financial risk management, liquidity transformation or auxiliary financial activities. It also includes insurance and pension scheme services.	-
Financial services (excluding insurance and pensions)	-	Services related to financial intermediation, financial risk management, liquidity transformation or auxiliary financial activities, excluding insurance and pension scheme services.	-
Financial transactions	-	Net acquisition of financial assets or the net incurrence of liabilities, for each type of financial instrument.	-
Fines and penalties	-	Compulsory payments imposed on institutional units by courts of law or quasi-judicial bodies.	-
Finished goods	-	Goods produced as outputs that their producer does not intend to process further before supplying them to other units.	AN123

Term	Alternative Term(s)	Definition	SNA Code
Fintech	-	Technology-enabled innovation in financial services that could result in new business models, applications, processes, or products with an associated material effect on the provision of financial services.	-
Fiscal monopolies	-	Public corporations, public quasi-corporations or government-owned unincorporated enterprises that have been granted a legal monopoly over the production or distribution of a particular kind of good or service in order to raise revenue and not in order to further the interests of public economic or social policy.	-
Fiscal policy	-	Use of the level and composition of the general government and public sectors' spending and revenue (related accumulation of government assets and liabilities) to achieve such goals as the stabilisation of the economy, the reallocation of resources and the redistribution of income.	-
Fisher's Ideal Price Index	-	Geometric mean of the Laspeyres and Paasche price indices.	-
Fixed assets	-	Produced assets that are used repeatedly or continuously in production processes for more than one year.	-
Fixed assets (excluding produced natural resources)	-	Produced assets that are used repeatedly or continuously in production processes for more than one year. Produced natural resources are excluded and grouped together with other natural resources.	AN11
Fixed-rate debt instruments	-	Debt instruments that are not variable-rate debt instruments (see also *variable-rate debt instruments*).	-
Flows	Economic flows	Transactions and other flows reflecting the creation, transformation, exchange, transfer or extinction of economic value; they typically involve changes in the volume, composition, or value of an institutional unit's assets, liabilities and net worth.	-
Foreign currency	-	Any currency other than the domestic currency.	-
Foreign currency forwards	-	Contracts where two counterparties agree to transact in foreign currencies at an agreed exchange rate in a specified amount at an agreed future date.	AF71S12
Foreign currency swaps	Currency swaps	Arrangements that involve the spot sale/purchase of currencies with a simultaneous forward purchase/sale of the same currencies.	-
Foreign-controlled corporation	-	Corporation that is controlled by a non-resident unit and produces goods and/or services for the market.	-

Term	Alternative Term(s)	Definition	SNA Code
Forward contracts	Forwards	Unconditional contracts by which two counterparties agree to buy or sell a specified quantity of an underlying item (financial or non-financial) at an agreed-upon contract price (the strike price) on a specified date. Forward contracts are traded over-the-counter.	-
Forward price	-	Price at which the underlying asset will be exchanged in a forward contract.	-
Forward rate agreements	-	Arrangements in which two parties agree on an interest rate to be paid, at a specified settlement date, on a notional amount of principal that is never exchanged.	-
Forward-type contracts	-	Forwards, futures, and swaps.	-
Free on board (FOB) basis	-	Valuation basis where goods are valued at the exporter's border—that is, including the cost of insurance and freight incurred up to the point of the goods leaving the economy of the exporter.	-
Freight services	-	Services related to transport of objects other than people.	-
From-whom-to-whom framework	-	A matrix-type presentation in which the counterparts of a certain non-financial or financial transaction are cross-classified, or the creditors of a certain financial asset position are cross-classified with the debtors of the relevant position.	-
Full-time equivalent labour input	-	Number of full-time equivalent jobs, defined as total hours actually worked by all employed persons divided by the average number of hours actually worked in full-time jobs.	-
Functional categories in the external accounts	-	Primary classification used for each of financial transactions, positions, and income in the external accounts. Five functional categories of investment are distinguished in the external accounts: (a) direct investment; (b) portfolio investment; (c) financial derivatives (other than reserves) and employee stock options; (d) other investment; and (e) reserve assets. The functional categories are designed to facilitate analysis by distinguishing categories that exhibit different economic motivations and patterns of behaviour.	-
Futures	-	Forward-type contracts traded on organised exchanges, typically settled by the payment of cash rather than the delivery of the underlying asset, and are valued and traded separately from the underlying item.	AF71S13

Term	Alternative Term(s)	Definition	SNA Code
General government	-	Legal entities established by political processes that have legislative, judicial or executive authority over other institutional units within a given area, principally engaged in non-market production intended for individual and collective consumption and in the redistribution of income and wealth by transfers, which is financed mainly by compulsory payments made by units belonging to other sectors. The general government sector consists of such institutional units at central, state and local level together with social security funds and non-market producers controlled by them.	S13
General merchandise on a balance of payments basis	General merchandise trade	Goods whose economic ownership is changed between a resident and a non-resident and that are not included in the following specific categories: goods under merchanting, non-monetary gold, and parts of travel, construction, and government goods and services n.i.e.	-
Gold bullion	-	Coins, ingots or bars with a purity of at least 995 parts per 1,000, including such gold held in allocated gold accounts. If held by a monetary authority as a reserve asset, gold bullion is treated, by convention, as a financial asset with no corresponding liability.	-
Gold swaps	-	Arrangements that involve the exchange of gold for foreign exchange with an agreement that the transaction be reversed at an agreed future date at an agreed gold price.	-
Goods	-	Physical, produced objects, over which ownership rights can be established and whose ownership can be transferred from one institutional unit to another by engaging in transactions on markets.	-
Goods and services account	-	Account that records the total domestic output and imports of goods and services supplied as resources to the economy (including the value of taxes less subsidies on products not already included in the valuation of output) and the use of the same goods and services as intermediate consumption, final consumption, capital formation and exports. In the external accounts, the goods and services account only includes exports and imports of goods and services between residents and non-residents.	-
Goods for resale	-	Goods acquired by enterprises such as wholesalers or retailers for the purpose of reselling or transferring them to other units without any further processing.	AN125

Term	Alternative Term(s)	Definition	SNA Code
Goods on consignment	-	Goods intended for sale, which are dispatched before they are sold.	-
Goodwill	Purchased goodwill	The difference between the value paid for an enterprise as a going concern and the sum of its assets less the sum of its non-equity liabilities, where each item has been separately identified and valued.	-
Government units	-	Unique kinds of legal entities established by political processes that have legislative, judicial, or executive authority over other institutional units within a given area.	-
Green debt securities	-	Debt securities where the use of proceeds is restricted to financing or refinancing activities or projects that improve the condition of the environment.	AF3ow12
Green equity	-	Equity investments by investors in institutional units in which 50 per cent or more of the institutional unit's revenue comes from activities improve the condition of the environment.	AF51ow12
Green finance	-	Finance for activities or projects that sustain or improve the condition of the environment.	-
Green investment fund shares/units	-	Shares or units in investment funds investing in financial instruments, companies, projects or other funds that intend to achieve performance objectives that improve the condition of the environment.	AF52ow12
Green loans	-	Loans in which 50 per cent or more of the debtor's activities improve the condition of the environment. In the case of business loans, the debtor's activities would be reflected in the business's revenue, while in the case of loans to households, they would depend on the use of the loan proceeds.	AF4ow12
Gross and net	-	The term "net" has two key uses. The first being the terms "gross" and "net" in conjunction with the balancing items for each account by institutional sector and the whole economy. In each case, the difference is depreciation and depletion of natural resources. Thus gross value added, gross domestic product, gross disposable income, etc. each have a net equivalent. The second being the recording of financial transactions in the financial account. Transactions can be recorded on a "gross" or "net" basis. For example, the financial account is recorded on a net basis, as acquisitions less disposals of the relevant assets and liabilities.	-

Term	Alternative Term(s)	Definition	SNA Code
Gross capital formation	-	Acquisitions less disposals of produced assets for purposes of fixed capital formation, inventories or valuables.	P5g
Gross domestic product	-	Total income earned through the production of goods and services in an economic territory during an accounting period. It can be measured in three different ways: using either the expenditure approach, the income approach, or the production approach; see the relevant terms.	-
Gross domestic product - expenditure approach	Gross domestic expenditure	The sum of expenditure on final consumption plus gross capital formation plus exports less imports.	-
Gross domestic product - income approach	Gross domestic income	Total income earned through the production of goods and services in the economy, consisting of remuneration of employees plus gross operating surplus plus gross mixed incomes plus taxes less subsidies on both production and imports	-
Gross domestic product - production approach	Gross domestic production	The value of total output less total intermediate consumption plus any taxes less subsidies on products not already included in the value of output.	-
Gross fixed capital formation	-	Acquisitions less disposals of fixed assets during the accounting period, including certain specified expenditures on services that add to the value of non-produced assets.	P51g
Gross national income	-	Total income earned by all residents within an economic territory during an accounting period. It is equal to gross domestic product plus earned income receivable from abroad minus earned income payable abroad.	-
Gross recording	-	Recording of aggregations or combinations in which all elementary items are shown for their full values. See also *gross and net*.	-
Gross value added at basic prices	-	Valuation of gross value added during an accounting period, which reflects the price of products receivable by the producer exclusive of taxes payable on products and inclusive of subsidies receivable on products, less intermediate consumption valued at purchasers' prices.	-
Gross valued added at producers' price	-	Valuation of gross value added during an accounting period, which reflects the price of products receivable by the producer inclusive of taxes on products except deductible value added tax and exclusive of subsidies on products, less intermediate consumption valued at purchasers' prices.	-

Term	Alternative Term(s)	Definition	SNA Code
Guarantees	-	Arrangements whereby the guarantor has an obligation to pay a third-party beneficiary when another institutional unit fails to perform certain contractual obligations.	-
Hajj funds	-	Market enterprises that undertake, as a significant part of its activities, the management of long-term savings open to individuals intending to undertake the Hajj pilgrimage in compliance with Shari'ah principles.	-
Head office	-	Institutional unit that oversees and manages other units of the company or enterprise; undertakes the strategic or organizational planning and decision-making role of the company or enterprise; exercises operational control and manages the day-to-day operations of their related units.	-
Hedge funds	-	Lightly regulated or unregulated investment funds and various types of money managers, including commodity trading advisers. They have the following characteristics: follow a relatively broad range of investment strategies that are not subject to borrowing and leverage restrictions; often have a different regulatory mandate than "institutional investors"; typically cater to high-net-worth individuals or institutions; and often hold long and short positions in various markets, asset classes and instruments, with frequent use of derivatives for speculative purposes.	-
Historic replacement cost	Historic cost accounting	Valuation method also known as historic cost accounting. This reflects the costs the unit has incurred at the time of acquiring the assets and goods and services used in production.	-
Holding company	-	Institutional unit that holds the assets (owning controlling-levels of equity) of a group of subsidiary corporations and whose principal activity is owning the group. Holding companies do not provide any other service to the enterprises in which the equity is held, i.e. they do not administer or manage other units.	-
Holding gains and losses - neutral	-	The amount by which the value of assets would be required to increase (decrease), in the absence of transactions and other changes in the volume of assets, to maintain command over the same amount of goods and services as at the beginning of the period.	K71

Term	Alternative Term(s)	Definition	SNA Code
Holding gains and losses - nominal	Revaluations	Changes in the monetary value of an asset or liability due to changes in the level of prices. In the external accounts, revaluations are restricted to those relating to financial assets and liabilities.	K7
Holding gains and losses - real	-	The amount by which the value of assets increases (decreases) beyond the neutral holding gains for the period, in the absence of transactions and other changes in the volume of assets.	K72
Holding gains and losses - realised	-	The amount of holding gains (losses) that has been realised as a consequence of the relevant assets being sold, redeemed, used or otherwise disposed of, or liabilities being repaid.	-
Holding gains and losses - unrealised	-	The amount by which the value of assets or liabilities increases (decreases), without being realised through sale, redemption, use, disposal, or repayment.	-
Homogeneous production unit	-	Notional production unit carrying out a single productive activity identified by its inputs, process of production and its outputs.	-
Horizontal double-entry bookkeeping	-	Principle to ensure the consistency of total payments and total receipts for each transaction category. It means that if unit A pays something to unit B, the accounts of both A and B show the transaction for the same amount.	-
Hours worked	-	The number of hours actually worked as an employee or self-employed person, to produce output recorded within the production boundary applied in the integrated framework of the SNA.	-
Household	-	A single person or a group of persons who share the same living accommodation, who pool some, or all, of their income and wealth and who consume certain types of goods and services collectively, mainly housing and food.	-
Households	-	All resident households, including institutional households made up of persons staying in hospitals, retirement homes, convents, prisons, etc. Unincorporated enterprises owned by households are treated as an integral part of households, unless these enterprises are distinguished as separate institutional unit (i.e., quasi-corporations).	S14
Human capital	-	The knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being.	AN6X

Term	Alternative Term(s)	Definition	SNA Code
Illegal transactions	-	Transactions which are forbidden by law. They only include actions in which the institutional units involved enter by mutual agreement. Otherwise, they are not recorded as transactions but as other flows.	-
IMF quota subscription	-	Refers to the financial contribution made by a member country to the IMF as a part of its membership in the organization. It consists of two components. i) foreign exchange component (25 percent) which a member is required to pay in SDRs or in foreign currencies acceptable to the IMF; and ii) domestic currency component (75 percent) which is payable in the member's own currency at a designated depository, normally the member's central bank.	-
Immediate investor	-	The first non-resident investor for direct investment.	-
Impairment	-	A loss in the future economic benefits or service potential of an asset, over and above the systematic recognition of the loss of the asset's future economic benefits or service potential through depreciation.	-
Implicit financial services on loans and deposits	-	Financial intermediation services which are implicitly charged in the form of either the difference between a reference rate and the interest rate actually paid to depositors, or the difference between the interest rate charged to borrowers and a reference rate. Implicit financial services on loans and deposits were formerly known as financial intermediation services indirectly measured (FISIM).	-
Import duties	-	Customs duties or other import charges that are payable on goods of a particular type when entering the economic territory.	D2121
Import subsidies	-	Subsidies that are receivable on goods when entering the economic territory, or on services being delivered to resident institutional units.	D311
Imports	-	Changes in the economic ownership of goods from non-residents to residents of the compiling economy, as well as services provided by non-residents to residents of the compiling economy.	P7
Imports of goods	-	Changes in the economic ownership of goods from non-residents to residents of the compiling economy, irrespective of physical movement of goods across national borders.	P71
Imports of services	-	Services provided by non-residents to residents of the compiling economy.	P72

Term	Alternative Term(s)	Definition	SNA Code
Imputation	-	Construction of entries in the accounts when no separate monetary transactions are identified by the parties involved but where economic flows are recognised.	-
In kind	-	Exchange of resources in a form other than monetary funds, for example in the form of goods, services or interest forgone.	-
Income on equity	-	Sum of dividends paid to owners of corporate equity, withdrawals from the income of quasi-corporations and reinvested earnings on foreign direct investment.	D412
Indexation of interest and principal	-	Index linking the amount of future cash flows of interest payments and/or principal repayments on the securities to a variable such as a general price index (e.g., consumer price index), a specific price index (e.g., the price of a commodity) or some other index.	-
Index-linked securities	Indexed financial instruments	Financial instruments for which either the coupon payments (interest) or the principal or both are linked to another item such as a price index, an interest rate or the price of a commodity.	-
Individual consumption expenditure	-	Expenditure on goods and services by resident institutional units for the direct satisfaction of the needs or wants of individual households. Individual final consumption expenditure can be measured for households, general government and non-profit institutions serving households.	P31
Individual consumption good or service	-	A good or service that is acquired by a household and used to satisfy the needs or wants of members of that household	-
Industry	-	Group of establishments engaged in the same, or similar, kinds of production activity. Importantly, it is not reserved to market producers; it can also refer to non-market producers.	-
Informal economy	-	All informal productive activities of persons or economic units, whether or not they are carried out for pay or profit. The scope of informal productive activities includes activities within the general production boundary; this includes informal household own-use production of goods and services, informal sector production, and the labour inputs that are used to undertake these types of production, as well as informal labour inputs in the formal sector.	-

Term	Alternative Term(s)	Definition	SNA Code
Informal sector	-	Household unincorporated market enterprises and the associated labour input that are not formally recognized by government authorities because they are not registered for tax or similar purposes.	-
Information, computer and telecommunications (ICT) equipment	-	Devices using electronic controls and also the electronic components forming part of these devices.	AN1132
Institutional sector	-	Group of similar kinds of institutional units according to their principal functions, behaviour and objectives.	-
Institutional unit	-	An economic unit that is capable, in its own right, of owning assets, typically able to incur liabilities, and engaging in economic activities and in transactions with other units.	-
Insurance and pension services	-	Services related to providing life insurance and annuities, non-life insurance, reinsurance, pensions, standardised guarantees and auxiliary services to insurance, pension schemes, and standardised guarantee schemes.	-
Insurance corporations	-	Incorporated, mutual and other units whose principal function is to provide individual coverage in case of life, accident, sickness, fire or other risks to individual institutional units or groups of institutional units, or to provide reinsurance services to other insurance corporations.	S1228
Insurance, pension and standardized guarantee schemes	-	Financial asset category, grouping together non-life insurance technical reserves; life insurance and annuity entitlements; pension entitlements; claims of pension funds on pension sponsor; entitlements to non-pension benefits, and provisions for calls under standardized guarantees.	AF6
Integrated international investment position	-	Reconciliation of the opening and closing values of the international investment position through the financial account (flows arising from transactions) and the other changes in financial assets and liabilities account (revaluations and other volume changes).	-
Intellectual property products	-	Assets resulting from research, development, investigation or innovation, leading to knowledge or the creation of artificial intelligence systems that the developers can market or use to their own economic benefit in production because use of the knowledge is restricted by means of legal or other protection.	AN115
Intercompany lending	-	Direct investment debt positions or flows between affiliated enterprises.	-

Term	Alternative Term(s)	Definition	SNA Code
Interest and similar returns	-	Form of investment income or interest-like income that is receivable by the owners of certain kinds of financial assets, namely: deposits, debt securities, loans and other accounts receivable and some similar instruments in the case of Islamic finance, for putting the financial asset at the disposal of another institutional unit. Income on SDR holdings and allocations is also treated as interest and similar returns. By convention, lending fees on securities, gold loans, gold swaps, and crypto assets without a corresponding liability designed to act as a general medium of exchange are classified as interest and similar returns. In the external accounts, trade credit and advances are in a separate category from other accounts receivable/payable and are also included in the list of financial assets that may accrue interest and similar returns.	D411
Interest rate	-	Amount charged, expressed as a percentage of the principal over a period of time, by the owners of certain kinds of financial assets for putting the financial assets at the disposal of another institutional unit.	-
Interest rate options	-	Contracts that give the buyer the right (but not the obligation) to pay or receive an agreed interest rate on a predetermined principal on or before a specified date.	-
Interest rate swaps	-	Contracts that involve an exchange of cash flows related to interest payments, or receipts, on a notional amount of principal, which is never exchanged, in one currency over a period of time.	-
Intermediate consumption	-	Goods and services consumed as inputs by a process of production, excluding fixed assets whose consumption is recorded as depreciation.	P2
International investment position	-	Statement that shows at a particular point in time the value and composition of financial assets of residents of an economy that are claims on non-residents or are gold bullion held as reserve assets and of the liabilities of residents of an economy to non-residents.	-
International organisation	-	Organisation whose members are either national states or other international organisations whose members are national states, and which is established by formal political agreements between its members that have the status of international treaties.	-

Term	Alternative Term(s)	Definition	SNA Code
International Standard Industrial Classification of All Economic Activities (ISIC)	-	Classification based on the principal productive activity, used for classifying producers by economic activity.	-
Intersectoral consolidation	-	Consolidation of a particular grouping of units spanning several institutional sectors or sub-sectors to produce statistics for that particular grouping.	-
Intra-sectoral consolidation	-	Consolidation within a particular sector, or sub-sector, to produce statistics for that particular sector or sub-sector.	-
Inventories	-	Produced assets that consist of goods and services which came into existence in the current period or in an earlier period, and that are held for sale, use in production or other use at a later date.	-
Inventories (excluding produced natural resources)	-	Produced assets that consist of goods and services which came into existence in the current period or in an earlier period, and that are held for sale, use in production or other use at a later date. Work-in-progress related to biological resources is excluded, and grouped together with other natural resources.	AN12
Inverse merchanting	-	A special case of merchanting, occurring when both the unit that is selling to the non-resident merchant and the unit that is subsequently purchasing from the non-resident merchant are both resident in the same economy and the goods do not leave and re-enter the economy of the units selling to and purchasing from the non-resident merchant.	-
Investment fund shares/units	-	Shares or units issued by investment funds, including money market funds and non-money market funds, that represent claims on part of the value of an established investment fund.	AF52
Investment funds	-	Collective investment undertakings through which investors pool funds for investment in financial or non-financial assets or both. Investment funds include money market funds (MMF) and non-MMF investment funds.	S1223 + S1224
Investment grants	-	Capital transfers made by governments or international organizations to other institutional units to finance all or part of the costs of their acquiring non-financial assets.	D92
Investment income	-	Income receivable by the owner of a financial asset in return for providing funds to another institutional unit.	D41

Term	Alternative Term(s)	Definition	SNA Code
Investment income attributable to insurance policyholders	-	Investment income receivable from the investment of insurance technical reserves, which is attributed to the policy holders.	D4131
Investment income attributable to investment fund share holders	-	Dividends and retained earnings of investment funds, which are attributable to the shareholders.	D4134
Investment income attributable to the surplus/shortfall in defined benefit pension funds	-	Investment income imputed on the claim of a pension fund towards its pension sponsor.	D4133
Investment income disbursements	-	The sum of investment income attributable to insurance policy holders, investment income payable on pension and non-pension entitlements, and investment income attributable to investment fund share holders.	D413
Investment income payable on pension and non-pension entitlements	-	Investment income received from the investment of assets accumulated for defined contribution schemes, and the unwinding of the discount of the entitlements for defined benefit schemes. The latter may also include some entitlements related to non-pension social insurance schemes.	D4132
Invoiced value added tax	-	Value added tax payable on the sales of a producer, shown separately on the invoice that the producer presents to the purchaser.	-
Islamic finance	-	The provision of financial services in accordance with Shariah principles.	-
Islamic financial institution	-	Financial institution that follows the principles of Shariah. Shariah, which denotes the Islamic law that governs the entire framework of activities in Islam, includes law regulating economic and financial activities in order to ensure fair transactions as well as social economic justice. Shariah prohibits financial transactions associated with interest for lending and borrowing, excessive uncertainty, speculation, or gambling; however, trading or transactions entailing a chance of gain or risk of loss are allowed.	-
Islamic window	-	That part of a conventional financial institution (which may be a branch or a dedicated unit of that institution) that provides both fund management (investment accounts) and financing and investment that are Shariah-compliant, with separate funds. It could also provide takaful or retakaful services.	-
Issue price	-	Price at which investors buy a debt security when first issued.	-

Term	Alternative Term(s)	Definition	SNA Code
Jobs	-	Contracts between employees and resident institutional units to provide labour in return for remuneration for a defined period or until further notice. The concept of jobs also applies to self-employed persons.	-
Joint venture	-	Contractual agreement between two or more parties for the purpose of executing a business undertaking in which the parties agree to share in the profits and losses of the enterprise as well as the capital formation and contribution of operating inputs or costs. It is similar to a partnership but typically differs in that there is generally no intention of a continuing relationship beyond the original purpose.	-
Kind-of-activity unit	-	An enterprise, or a part of an enterprise, that engages in only one kind of productive activity or in which the principal productive activity accounts for most of the value added. A kind-of-activity unit must be more homogeneous with respect to output, cost structure and technology of production than the enterprise as a whole.	-
Knowledge-capturing products	-	Products that concern the provision, storage, communication and dissemination of information, advice and entertainment in such a way that the consuming unit can access the knowledge repeatedly.	-
Labour force	Economically active population	All resident persons who are actively prepared to make their labour available during any particular reference period for producing goods and services that are included within the production boundary applied in the integrated framework of the SNA.	-
Labour input	-	All persons, both employees and self-employed persons, engaged in some productive activity that falls within the production boundary of the integrated framework of the SNA and that is undertaken by a resident institutional unit.	-
Land	-	Ground, including the soil covering and any associated surface waters, over which ownership rights are enforced and from which economic benefits can be derived by their owners by holding or using them.	AN31
Land improvements	-	Major improvements in the quantity, quality or productivity of land or prevent its deterioration. Such improvements are recorded as capital formation and the additional value is shown as a separate asset within produced non-financial assets (excluding natural resources).	AN1123

Term	Alternative Term(s)	Definition	SNA Code
Laspeyres price (or volume) index	-	Index calculated as the weighted arithmetic average of price (or volume) relatives using the values (or volumes) of the earlier period as weights.	-
Lease	-	Agreement whereby the lessor conveys to the lessee, in return for a payment or series of payments, the right to use an asset for an agreed period of time.	-
Legal entity	Social entity	A unit whose existence is recognized by law or society independently of the persons, or other units, that may own or control it.	-
Legal obligations	-	Obligation derived from a contract (through its explicit or implicit terms), legislation, or another operation of law.	-
Legal owner	-	The institutional unit entitled in law and sustainable under the law to claim the economic benefits associated with goods, services, natural resources, financial assets or liabilities (which may be different from the economic owner).	-
Legally constituted corporations	-	Legal entities created for the purpose of producing goods or services for the market that may be a source of profit or other financial gain to its owner(s). They are collectively owned by shareholders who have the authority to appoint directors responsible for its general management.	-
Liabilities	Financial liabilities	Obligations where one unit (the debtor) is obliged, under specific circumstances, to provide funds or other resources to another unit (the creditor). These include shares and other equity in corporations.	-
Life insurance	-	Activity whereby a policyholder makes regular payments to an insurer in return for which the insurer guarantees to provide the policyholder (or in some cases another nominated person) with an agreed sum, or an annuity, at a given date or earlier if the policyholder dies beforehand. It excludes term life insurance.	-
Life insurance and annuity entitlements	-	Financial claims of policyholders against an institutional unit offering life insurance or providing annuities.	AF62
Limited liability entity	-	A legal entity where the owners' liability is limited to the amount of their investment in the company. This means that the personal assets of the owners are generally protected from the debts and obligations of the business.	-

Term	Alternative Term(s)	Definition	SNA Code
Liquidating dividends	-	Dividends payable to shareholders as a result of an enterprise becoming bankrupt, after settling all other obligations.	-
Liquidity	-	Ability to sell assets quickly and in large volume without substantially affecting their price. In terms of financial instruments, liquidity generally refers to those assets that can be converted into a medium of exchange quickly without a significant loss in value.	-
Liquidity risk	-	Risk related to meeting obligations associated with financial liabilities that are settled by delivering cash or another financial asset.	-
Listed shares	Quoted shares	Equity securities listed on an exchange (also known as quoted shares).	AF511
Loans	-	Financial assets that are created when a creditor lends funds directly to a debtor and are evidenced by documents that are not negotiable.	AF4
Local government	-	Part of general government that includes all institutional units whose fiscal, legislative, and executive authority extends over the smallest geographical areas distinguished for administrative and political purposes, as well as those non-market producers controlled by local governments. Social security funds organized and managed by different levels of government are typically classified in a separate subsector of general government. Alternatively, social security funds that are organized and managed by the local governments could be included in the local governments subsector.	S1313
Local unit	-	An enterprise, or a part of an enterprise, that engages in productive activity at or from one location.	-
Long-term maturity	-	Maturity of more than one year or with no stated maturity.	-
Machinery and equipment	-	Transport equipment, machinery for information, communication and telecommunications equipment, and other machinery and equipment used for production purposes.	AN113
Manufacturing services on physical inputs owned by others	-	Services related to processing, assembly, labelling, packing and so forth undertaken by enterprises that do not own the goods concerned.	-

Term	Alternative Term(s)	Definition	SNA Code
Margins	-	Collateral provided to cover potential obligations. The required provision of margin reflects counterparty risk and is standard in financial derivative markets, especially for futures and exchange-traded options.	-
Market output	-	Output intended for sale at economically significant prices.	P11
Market prices	Market values	Amounts of money that willing buyers pay to acquire something from willing sellers. Exchanges are made between independent parties and on the basis of commercial considerations only - sometimes called “at arm’s length”.	-
Market producers	-	Establishments, all or most of whose output is market output.	-
Market risk	-	Risk related to fluctuations in the value or the future cash flows of a financial instrument. Market risk comprises three types of risk: currency risk, interest rate risk and other price risk.	-
Marketable operating leases	-	Third-party property rights relating to leased fixed assets.	AN211
Market-equivalent prices	Market-equivalent values	Valuation method to approximate market prices by using the prices of similar goods, services or assets adequately adjusted for differences in characteristics.	-
Marketing assets	-	Items such as brand names, mastheads, trademarks, logos and domain names.	-
Materials and supplies	-	All products that a producer holds in inventory with the intention of using them as intermediate inputs into own production and not to resell them.	AN121
Maturity	-	Period at the end of which a financial instrument will cease to exist and the principal is repaid with interest.	-
Means of payment	-	Refers to the instrument used to make the payment, such as cash, a check, debit/credit card, stablecoins, or crypto assets without corresponding liability (e.g., Bitcoins).	-
Medium of exchange	-	A means for acquiring goods, services, or assets without resorting to barter. Acting as a medium of exchange is one of the basic functions of money, which takes the form of various types of financial instruments.	-
Memorandum items	-	Additional items of special analytical interest, which are added to the presentation, but do not impact the totals and balancing items derived from the macro-economic system.	-

Term	Alternative Term(s)	Definition	SNA Code
Merchanting	-	Purchase of goods by a resident (of the compiling economy) from a non-resident combined with the subsequent resale of the same goods to another non-resident without the goods being physically moved in and out of the compiling economy.	-
Merger	-	When two or more companies agree to combine into a single operation.	-
Metadata	-	Systematic, descriptive information about data content and organisation, providing information on the concepts, sources and methods underlying the data and therefore help users to understand and assess the characteristics of the data.	-
Military inventories	-	Inventories consisting of single-use items such as ammunition, missiles, rockets, bombs, etc., delivered by weapons or weapons systems.	AN124
Mineral and energy resources	-	Known deposits of oil resources, natural gas resources, coal and peat resources, non-metallic minerals and metallic minerals located on or below the Earth's surface, and renewable energy resources (especially related to the capture of energy from wind, solar radiation, moving water, and geothermal sources), that are economically exploitable, given current technology and relative prices.	AN32
Mineral exploration and evaluation	-	Capitalised value of expenditures on exploration for mineral and energy deposits, and the subsequent evaluation of the discoveries.	AN1152
Miscellaneous current transfers	-	Current transfers, in cash or in kind, other than current taxes on income, wealth, etc, social contributions less service charges and social benefits, non-life insurance premiums less service charges and non-life insurance claims, current transfers within general government and current international cooperation. In the external accounts, miscellaneous current transfers include all current transfers, in cash or in kind, other than personal transfers, current taxes on income, wealth, etc.; social contributions less service charges and social benefits; non-life insurance premiums less service charges and non-life insurance claims; and current international cooperation.	D75
Mixed Income	-	Income earned by an unincorporated enterprise from the use of the owner's labour and capital in the production of goods and services during an accounting period.	B3

Term	Alternative Term(s)	Definition	SNA Code
Monetary authorities	-	Authorities encompassing the central bank (which subsumes other institutional units included in the central bank subsector, such as the currency board) and certain operations usually attributed to the central bank but sometimes carried out by other government institutions or commercial banks, such as government-owned commercial banks. Such operations include the issuance of currency; maintenance and management of reserve assets, including those resulting from transactions with the IMF; and operation of exchange stabilization funds.	-
Monetary base	-	Central bank liabilities that support the expansion of credit and broad money.	-
Monetary gold	-	Gold to which the monetary authorities (or others who are subject to the effective control of the monetary authorities) have title and is held as a reserve asset. It comprises gold bullion (including gold held in allocated gold accounts) and unallocated gold accounts with non-residents that give title to claim the delivery of gold.	AF11
Monetary transactions	-	Transactions in which one institutional unit makes a payment (receives a payment) or incurs a liability (acquires a financial asset) stated in units of currency.	-
Monetary union	-	A group of economies with the presence of a single monetary policy among them, established by an intergovernmental legal agreement.	-
Money aggregates	-	Measures of money supply in an economy that have progressively broader coverage of money components (M1, M2, M3, etc.).	-
Money lenders	-	Persons or groups of persons who offer small personal loans using mostly own funds. Their assets or liabilities are not transacted in open financial markets.	-
Money market fund shares/units	-	Shares or units issued by money market funds that represent claims on part of the value of an established money market fund.	AF521
Money market funds	-	Collective investment schemes that raise funds by issuing shares or units to the public, and primarily investing in money market instruments, money market fund shares or units, transferable debt instruments with a residual maturity of not more than one year, bank deposits, and instruments that pursue a rate of return that approaches the interest rates of money market instruments.	S1223

Term	Alternative Term(s)	Definition	SNA Code
Mudaraba	-	A partnership contract between the capital provider (rabb al-māl) and an entrepreneur (muḍārib) whereby the capital provider would contribute capital to an enterprise or activity that is to be managed by the entrepreneur. Profits generated by that enterprise or activity are shared in accordance with the percentage specified in the contract, while losses are to be borne solely by the capital provider unless the losses are due to misconduct, negligence or breach of contracted terms.	-
Multiemployer social insurance scheme	Multi-employer scheme	Social insurance schemes where the assets contributed by multiple employers are pooled together, to provide benefits to employees, on the basis that contribution and benefit levels are determined without regard to the identity of the employer.	-
Multinational enterprise	-	Legal entity that has at least one non-resident affiliate or branch, and exercises control over its affiliate(s) or branch(es) either directly—by having over 50 percent of the voting power in the unit—or by indirect transmission of control. The multinational enterprise is the ultimate controlling parent—the direct investor at the top of the control chain.	-
Multinational enterprise group	Global enterprise group	The multinational enterprise and the set of units—regardless of their economies of residence—that are under the control of the same ultimate controlling parent.	-
Multi-territory enterprise	-	Enterprise that operates as a seamless operation over more than one economic territory. Although the enterprise has substantial activity in more than one economic territory, it is run as an indivisible operation with no separate accounts or decisions, so that separate branches cannot be identified. Such enterprises may have operations such as shipping lines, airlines, hydroelectric schemes on border rivers, pipelines, bridges, tunnels, and undersea cables.	-
Musharaka	-	Partnership contract in which the partners agree to contribute capital to an enterprise, whether existing or new. Profits generated by that enterprise are shared in accordance with the percentage specified in the mushara contract, while losses are shared in proportion to each partner's share of capital	-
National disposable income	-	Total income available for final consumption expenditure or saving.	-

Term	Alternative Term(s)	Definition	SNA Code
National net worth	-	Total value of non-financial assets of the residents of an economy plus the balance of financial assets and liabilities of the residents with the rest of the world.	-
National private corporation	-	Corporation that is neither controlled by a government unit, or another public unit, nor by a non-resident unit.	-
Natural capital	-	The combination of natural resources and ecosystem assets, of which the latter are not explicitly recognized as economic assets in the integrated framework of national accounts.	AN5x (=AN3 + AN4X)
Natural resource leases	-	Contractual agreements whereby the legal owner of a natural resource makes it available to a lessee in return for a regular payment recorded as rent.	-
Natural resources	-	Assets that naturally occur, such as land, mineral and energy resources, water resources, and animal, tree, crop and plant resources, that have an economic value and over which ownership may be enforced and transferred. Environmental assets over which ownership rights have not, or cannot, be enforced, such as high seas beyond national jurisdiction and most parts of the atmosphere, are excluded.	AN3
Negotiable instruments	-	Financial instruments whose legal ownership is readily capable of being transferred from one owner to another by delivery or endorsement. These are designed to be traded on an organised exchange or over the counter, although evidence of actual trading is not required for an instrument to be considered negotiable.	-
Net asset value	-	Valuation method for unlisted equity, by using total assets at current value less total liabilities (excluding equity) at market value.	-
Net capital formation	-	Gross capital formation, after deduction of depreciation.	P5n
Net debt	-	Amount of debt held by an institutional unit after subtracting the value of financial assets it holds corresponding to debt liabilities of other institutional units.	-
Net financial worth	-	Total value of financial assets less the total value of liabilities.	-
Net fixed capital formation	-	Gross fixed capital formation, after deduction of depreciation.	P51n
Net international reserves	-	Reserve assets minus short-term net foreign currency drains.	-

Term	Alternative Term(s)	Definition	SNA Code
Net lending / net borrowing	-	Net lending is defined as the difference between changes in net worth due to saving and capital transfers and net acquisitions of non-financial assets (acquisitions less disposals of non-financial assets, less depreciation and depletion). If the amount is negative, it represents net borrowing. In the external accounts, it represents the sum of the balances on the current and capital accounts. This is conceptually equal to the net balance of the financial account. If the balance is positive, it is called net lending, implying that in net terms, the economy supplies funds to the rest of the world. If the balance is negative, it is called net borrowing, implying that in net terms, the economy receives funds from the rest of the world	B9
Net realisable value	-	Estimated selling price in the ordinary course of operations, less the estimated costs of completion and the estimated costs necessary to make the sale, exchange or distribution.	-
Net recording	-	Recording which reflects aggregations or combinations for which the values of some elementary items are offset against the same items that have an opposite sign. See also *gross and net*.	-
Net recording of financial transactions	-	Recording of financial transactions is the recording of the acquisition of financial assets net of disposals and the incurrence of liabilities net of repayments.	-
Net worth	-	The value of an institutional unit's assets less the value of its outstanding liabilities (including shares and other equity).	B90
Netting	-	Occurs in categories such as changes in inventories and increases in assets and liabilities to show the final effect of these types of flows at the end of the accounting period.	-
Nominal value	-	Outstanding amount the debtor owes to the creditor, which is composed of the outstanding principal amount including any accrued interest.	-
Non-cultivated biological resources yielding once-only products	-	Animal resources, and tree, crop and plant resources that yield once-only products over which ownership rights, often collectively by government, are enforced but for which natural growth or regeneration is not under the direct control, responsibility and management of institutional units. An example relates to fish in open waters, but could also include herding wild animals.	AN3322
Non-deductible value added tax (VAT)	-	Value added tax (VAT) payable by a purchaser that is not deductible from his own VAT liability, if any.	-

Term	Alternative Term(s)	Definition	SNA Code
Non-financial accounts	-	Total of accounts representing production, generation of earned income, distribution of earned and transfer income, use of income, and accumulation of capital via capital transfers and purchases, less disposals, of non-financial assets. In the context of external accounts, non-financial accounts include the current and capital accounts.	-
Non-financial assets	-	Assets other than financial assets.	-
Non-financial corporations	-	Institutional units whose principal activity is the production of market goods or non-financial services.	S11
Non-fungible tokens (NFTs)	-	Digital records hosted on a blockchain that are associated with a digital or physical asset or product but that are distinct from that asset or product. These tokens may be treated as i) services if they convey no ownership rights and only allow for personal use of another asset or commodity; ii) non-produced non-financial assets in cases that they grant limited ownership rights from which the owner can derive economic benefits; or iii) a digital recording of ownership similar to a property title, not a separate asset if they conveys full ownership rights.	AN214
Non-life insurance	-	Insurance providing cover to the policyholder against loss or damage suffered as a result of accidents, sickness, fire, etc. It also includes term life insurance.	-
Non-life insurance claims	-	The amounts payable in settlement of injuries or damages that result from an event covered by the non-life insurance (or reinsurance) policy occurring in the period for which the policy is valid. In the case of major catastrophic events, some proportion of the claims may be recorded as capital transfers.	D72
Non-life insurance claims outstanding	-	Claims related to non-life insurance (or reinsurance), which have not yet been reported, have been reported but not yet settled, or have been both reported and settled but not yet paid.	-
Non-life insurance premium supplements	Non-life insurance premiums - supplements	Investment income earned from the investment of the (non-life) insurance technical reserves, excluding any holding gains and losses. The amounts involved cover earnings foregone by the insurance policyholders by putting the funds at the disposal of the insurance corporation.	-
Non-life insurance premiums - actual	-	Actual amount payable to the direct insurer or reinsurer to secure insurance cover for a specific event over a stated time period, as covered by a non-life insurance (or reinsurance) policy.	-

Term	Alternative Term(s)	Definition	SNA Code
Non-life insurance premiums - actual (earned)	Actual non-life insurance premium earned	The part of actual non-life insurance premiums that relates to insurance cover provided in the accounting period.	-
Non-life insurance premiums - actual (unearned)	Actual non-life insurance premium unearned	The part of actual non-life insurance premiums that relates to insurance cover provided in the period past the accounting point.	-
Non-life insurance premiums less service charges	-	The sum of actual non-life insurance (or reinsurance) premiums payable by policyholders to obtain insurance cover during the accounting period (actual premiums earned) and the premium supplements payable out of the investment income attributed to insurance policyholders less the service charges payable to the insurance corporation.	D71
Non-life insurance technical reserves	-	Reserves related to non-life insurance (and reinsurance) consisting of prepayments of non-life insurance premiums less service charges and reserves to meet outstanding non-life insurance claims	AF61
Non-market output	-	Goods and individual or collective services produced by government, the central bank and non-profit institutions serving households (NPISHs) that are supplied free, or at prices that are not economically significant, to other institutional units or the community as a whole.	P13
Non-market producers	-	Establishments owned by government units, the central bank or non-profit institutions serving households (NPISHs) that supply goods or services free, or at prices that are not economically significant, to households or the community as a whole.	-
Non-monetary gold	-	Gold bullion not held as reserve assets. It is a non-financial asset. In the national accounts, stocks and flows of non-monetary gold are recorded in the capital account. In the external accounts, cross-border transactions are recorded in the goods account under non-monetary gold while stocks are not recorded.	-
Non-monetary transactions	-	Transactions that are not initially stated in units of currency.	-
Non-money market investment fund	-	Collective investment schemes that raise funds by issuing shares or units to the public, and investing, on their own account, predominantly in longer-term financial assets, such as equity shares, bonds, and mortgage loans, and nonfinancial assets.	S1224

Term	Alternative Term(s)	Definition	SNA Code
Non-money market investment fund shares/units	-	Shares or units issued by non-money market funds, that represent claims on part of the value of an established non-money market investment fund.	AF522
Non-observed economy	-	Economic activity missing from statistical data collections and from administrative sources. Conceptually included are illegal activities where the parties are willing partners in an economic transaction; hidden and underground activities where the transactions themselves are not against the law, but are unreported to avoid official scrutiny; activities described as 'informal', and typically where no records are kept.	-
Non-participating preferred shares	Non-participating preferred stocks	Shares or stocks that pay a fixed income but do not provide for participation in the distribution of the residual value of an incorporated enterprise on dissolution, and so are classified as debt securities.	-
Non-pension social benefits	-	Social benefits payable to individuals that are not pensions, but paid when the relevant individuals are, for example, temporarily unemployed, suffering from a medical condition, or suffering from an event that prevents them from working for a period.	-
Non-performing loans	-	Loans for which payments of interest and/or principal are past due by 90 days or more; or interest payments equal to 90 days or more have been capitalised or delayed by agreement; or evidence exists to reclassify a loan as non-performing even in the absence of a 90-day past due payment such as when the debtor files for bankruptcy.	-
Non-produced non-financial assets (excluding non-produced natural resources)	-	Non-financial assets that have come into existence in ways other than through processes of production, excluding non-produced natural resources. They consist of contracts, leases and licences; crypto assets without a corresponding liability, purchased goodwill and marketing assets.	AN2
Non-profit institutions	-	Legal or social entities created for the purpose of producing goods and services but whose status does not permit them to be a source of income, profit or other financial gain for the units that establish, control or finance them.	-
Non-profit institutions serving households	-	Non-profit institutions principally engaged in the production of non-market services, which are not controlled by government	S15

Term	Alternative Term(s)	Definition	SNA Code
Non-renewable mineral and energy resources	-	Known deposits of non-renewable oil resources, natural gas resources, coal and peat resources, non-metallic minerals and metallic minerals located on or below the Earth's surface, that are economically exploitable, given current technology and relative prices.	AN321
Notional resident units	-	Institutional units identified for statistical purposes to be the resident owner of immovable assets legally owned by non-residents.	-
Notional value of a financial derivative	-	The amount underlying a financial derivative contract that is necessary for calculating payments or receipts on the contract, sometimes called notional amount or nominal amount of a financial derivative.	-
Observable phenomena related to data	-	A fact or situation whose characteristics or attributes may be recorded for the collection of data. Observable phenomena are by nature non-produced, and are generally not part of the SNA asset boundary.	-
Off-market swaps	-	Swaps that have non-zero values at inception as a result of having prices not based on current market values, that is, “off-the-market.”	-
Offshore bank	-	A deposit-taking corporation established in jurisdictions that provide legal and fiscal advantages such as low or no taxation and less stringent regulations in terms of reserve requirements or foreign exchange restrictions. They engage exclusively (or almost exclusively) with non-residents.	-
Offshore financial centres	-	Jurisdictions in which the majority of the financial transactions are conducted by resident financial corporations on behalf of clients who reside outside the offshore financial centre.	-
On-balance sheet securitisation	-	Debt securities backed by a future revenue stream generated by underlying assets. The latter assets remain on the balance sheet of the debt securities issuer (the original owner of the underlying assets), typically as a separate portfolio. There is no securitisation unit involved.	-
One-off guarantees	-	Guarantees where the debt instrument is so particular that it is not possible to calculate the degree of risk associated with the debt with any degree of accuracy.	-

Term	Alternative Term(s)	Definition	SNA Code
On-lending	-	Arrangement where an institutional unit A, borrowing from another institutional unit B, and then on-lending the proceeds from this borrowing to a third institutional unit C, where it is understood that unit A obtains an effective financial claim on unit C.	-
Operating lease	Operational lease	Contract between a lessor and a lessee, under which the lessor charges a rental to the lessee for the use of a produced non-financial asset, and the lessor remains the legal and economic owner of the asset.	-
Operating surplus	-	The income earned by resident corporations from the use of their capital in the production of goods and services during an accounting period.	B2
Option-type contracts	Options	Contracts that give the purchaser of the option the right, but not the obligation, to buy (a “call” option) or to sell (a “put” option) a particular financial or non-financial item at a predetermined price (the “strike” price) either within a given time span (American option) or on a given date (European option).	AF71S11
Original maturity	-	Period from the issue date of a financial instrument until the final contractually scheduled payment date.	-
Other accounts receivable/payable	-	Trade credit and advances and miscellaneous other items due to be paid or received.	AF8
Other accounts receivable/payable n.e.c.	-	Financial claims arising from timing differences between distributive transactions or financial transactions on the secondary market, and the corresponding payments.	AF89
Other buildings and structures	-	Non-residential buildings, other structures and land improvements.	AN112
Other capital transfers	-	All capital transfers except capital taxes, investment grants, and debt forgiveness.	D99
Other changes in assets and liabilities	Other flows; Other economic flows	Changes in the value of assets and liabilities not due to transactions. They consist of other changes in the volume of assets and liabilities and revaluations. In the external accounts, the other changes in assets and liabilities are restricted to those relating to financial assets and liabilities.	K1 - K7

Term	Alternative Term(s)	Definition	SNA Code
Other changes in the volume of assets and liabilities	-	Changes in the value of assets and liabilities that are neither due to transactions nor due to holding gains and losses (revaluations). They include, amongst others, economic appearance and disappearance of non-produced assets, catastrophic losses, cancellations and write-offs of debt, uncompensated seizures, reclassifications, and the changes in financial assets and liabilities arising from units changing their economy of residence. In the external accounts, the other changes in the volume of assets and liabilities are restricted to those relating to financial assets and liabilities.	K1 - K6
Other current taxes	-	Current taxes on income, wealth, etc. excluding the taxes on income, profits, and capital gains.	D59
Other current transfers	-	All current transfers other than current taxes on income, wealth, etc., social contributions and social benefits, and social transfers in kind. In the external accounts, all current transfers other than personal transfers are included in other current transfers.	D7
Other deposits	Non-transferable deposits	Claims other than transferable deposits, that are represented by evidence of deposit.	AF29
Other equity and equity in international organizations	-	All forms of equity other than listed and unlisted shares. In the case of equity in international organizations, it also includes non-tradable shares.	AF519
Other ESG debt securities	-	All ESG debt securities other than social, green, sustainability and sustainability-linked debt securities.	AF3ow19
Other financial corporations	-	Corporations and quasi-corporations, except the central bank and other deposit-taking corporations, that are principally engaged in providing financial services to other institutional units. In monetary and financial statistics, other financial corporations are defined as financial corporations that do not issue liabilities included in broad money.	-
Other financial intermediaries except insurance corporations and pension funds	-	Institutional units principally engaged in providing financial services by incurring liabilities, in forms other than currency, deposits, or close substitutes for deposits, on their own account for the purpose of acquiring financial assets by engaging in financial transactions on the market, and that are not included in another sub-sector.	S1225

Term	Alternative Term(s)	Definition	SNA Code
Other intellectual property products	-	Intellectual property products, which are not captured as research and development, mineral exploration and evaluation, computer software, data and databases, or entertainment, literary and artistic originals.	AN1159
Other machinery and equipment	-	Machinery and equipment, other than transport equipment and ICT-equipment	AN1139
Other miscellaneous current transfers	Miscellaneous current transfers	Fines and penalties, payments (after deduction of service charge and donations) and receipts related to lotteries and gambling, and payments for compensation	D759
Other natural resources	-	Assets representing the effective economic ownership rights over the use of the spectrum, and other natural resources not elsewhere classified.	AN39
Other price changes	-	All changes in value resulting from revaluations, except those due to exchange rate changes.	-
Other recurrent taxes on property (GFS)	-	All recurrent taxes on property other than those on immovable property, or net wealth.	-
Other social insurance benefits	Other employment-related social insurance benefits	Social benefits payable by social insurance schemes to households, requiring the participation, through the payment of social contributions, in a social insurance scheme other than a social security scheme.	D622
Other structures	-	Structures other than buildings, including the cost of the streets, sewer, etc.	AN1122
Other subsidies on production	-	Subsidies other than subsidies on products that resident enterprises may receive as a consequence of engaging in production.	D39
Other subsidies on products	-	Subsidies on goods or services produced by resident enterprises, or on imports, that become payable as a result of the production, sale, transfer, leasing or delivery of those goods or services, or as a result of their use for own consumption or own capital formation.	D319
Other taxes on production	-	Taxes on production other than taxes on products that enterprises incur as a result of engaging in production.	D29
Other valuables	-	Valuables not elsewhere classified, such as collections and jewellery of significant value fashioned out of precious stones and metals.	AN139

Term	Alternative Term(s)	Definition	SNA Code
Output	-	Goods and services produced by an establishment, excluding the value of any goods and services used in an activity for which the establishment does not assume the risk of using the products in production, and excluding the value of goods and services consumed by the same establishment except for goods and services used for capital formation (fixed capital or changes in inventories) or own final consumption.	P1
Output for own final use	Output from own account production	Products produced that are retained by the producer for their own use as final consumption or capital formation.	P12
Output of services from owner-occupied dwellings	-	Imputed transaction to reflect the estimated value of rental is that which a tenant would pay for the same accommodation.	-
Overnight deposits	Sweep accounts	Deposits (or sweep accounts) involving funds that are moved back and forth overnight.	-
Own funds	-	The difference between total assets and total liabilities excluding shares and other equity.	-
Paasche price (or volume) index	-	Index calculated as the weighted arithmetic average of price (or volume) relatives using the values (or volumes) of the recent period as weights.	-
Parent	-	Entity that controls an enterprise.	-
Partitioning	-	Splitting a transaction, that is a single transaction from the perspective of the parties involved, into two or more differently classified transactions.	-
Pass-through funds	Funds in transit	Funds passing through a direct investment enterprise resident in an economy to an affiliate in another economy, so that the funds do not stay in the economy of the first enterprise.	-
Past due	-	Failure of a counterparty to make a payment when that payment was contractually due.	-
Pension entitlements	-	Financial claims that both existing and future pensioners hold against either their employer, a fund designated by the employer to pay pensions earned as part of a compensation agreement between the employer and employee, or a specific collective fund established for self-employed persons.	AF63
Pension funds	-	Social insurance pension schemes that are institutional units separate from the units that create them.	S1229

Term	Alternative Term(s)	Definition	SNA Code
Permits to undertake specific activities	-	Permits which are limited in number and so allow the holders to earn monopoly profits, where the monopoly profits do not come from the use of an asset belonging to the permit-issuer, and which a permit holder is able both legally and practically to sell the permit to a third party.	AN212
Perpetual Inventory Model	-	Method for estimating the level of fixed assets and depreciation from time series of gross fixed capital formation. A depreciation function is used to calculate depreciation and to obtain net capital stock by subtracting accumulated depreciation from the gross capital stock.	-
Perpetuities	-	Refers to financial instruments which have no stated maturity, but offer a fixed-coupon payment at some periodic interval in perpetuity.	-
Personal remittances	-	The sum of all household-to-household transfers and the net earnings of non-resident workers in the economy of employment. In technical terms, personal remittances are defined as current and capital transfers in cash or in kind between resident households and non-resident households, plus remuneration of employees received by non-resident workers in the economy of employment, minus taxes and social contributions paid and transport and travel expenditures related to working abroad.	-
Personal transfers	-	Current transfers, in cash or in kind, made or received by resident households to or from non-resident households.	-
Population	-	All persons who are resident in the economic territory at a given point in time.	-
Precious metals and stones	-	Precious metals and stones not held by enterprises for sale or use as inputs to processes of production, nor held as monetary gold and not held as a financial asset in the form of unallocated precious metal accounts.	AN131
Present value	Net present value	Value of an asset determined by estimating the stream of economic benefits expected to be earned in the future and then discounting the future economic benefits back to the present accounting period.	-
Principal (original)	-	Amount borrowed and to be repaid excluding interest due or accrued.	-
Principal (outstanding)	-	The remaining liability of a debtor, established through the provision of economic value by a creditor, or the creation of debt liabilities through other means, which until extinguished may change in value over time.	-

Term	Alternative Term(s)	Definition	SNA Code
Principal activity	-	The activity of (a part of) an enterprise whose value added exceeds that of any other activity carried out within the same unit.	-
Produced non-financial assets (excluding produced natural resources)	-	Non-financial assets that have come into existence as outputs from production processes that fall within the production boundary of the integrated framework of national accounts, excluding produced natural resources. They consist of fixed assets, inventories and valuables.	AN1
Producer's price	-	Amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any VAT, or similar deductible tax, invoiced to the purchaser. It excludes any transport charges invoiced separately by the producer.	-
Production	-	Activity carried out under the responsibility, control and management of an institutional unit, that uses inputs of labour, capital and goods and services to produce outputs of goods and services.	-
Production boundary	-	Boundary of what constitutes production, including the production of goods and services supplied, or intended to be supplied, to units other than their producers; the own-account production of goods and knowledge-capturing products retained by their producers for their own final consumption or gross capital formation; the own-account production of housing services by owner occupiers; and the production of domestic and personal services by employing paid domestic staff.	-
Productivity	-	Measure of output, or value added, per unit of input.	-
Products	-	Goods and services (including knowledge-capturing products) that result from a process of production.	-
Promissory note	-	Unconditional promise to pay a certain sum on demand on a specified date.	-
Property income	-	Income receivable by the owner of a financial asset or the owner of a non-produced natural resource or another non-produced non-financial asset in return for providing funds to, or putting the non-financial assets at the disposal of, another institutional unit.	D4

Term	Alternative Term(s)	Definition	SNA Code
Provisions	-	Funds set aside by an economic unit to cover future liabilities of uncertain timing or amount, due to unexpected events, terminal costs, or default by customers. Provisions are not treated as liabilities in macroeconomic statistics (with the exception of those related to standardised guarantees), although they may be available as supplementary information. In monetary and financial statistics, provisions for losses on assets are presented as if these items are liabilities.	-
Provisions for calls under standardised guarantees	-	Prepayments of fees less service charges and provisions to meet the expected calls under outstanding standardized guarantees.	AF66
Provisions for loan losses	Loan loss provisions	Allowances against bad or impaired loans, based on the lender's judgment as to the likelihood of losses.	-
Public corporations	-	Corporations, or quasi-corporations, with the production of market goods and services as their principal activity, who are controlled by a government unit, another public corporation or some combination of government units and public corporations, where control is defined as the ability to determine the general corporate policy of the corporation.	-
Public monuments	-	Buildings and other structures of particular historical, national, regional, local, religious or symbolic significance.	-
Public sector	-	Sector comprising of all general government units and public corporations within an economic territory.	-
Public-private partnerships	-	Long-term contracts between a private unit (usually a private enterprise but occasionally a private non-profit institution) and a public unit for the provision of a public asset or set of assets and related services in which the private party acquires, builds, or refurbishes an asset, operates the asset for the contract period and bears significant risk and management responsibility.	-
Purchased goodwill and marketing assets	-	The sum of goodwill (i.e., the difference between the value paid for an enterprise as a going concern and the sum of its assets less the sum of its non-equity liabilities) and any separately identified marketing assets (i.e., items such as brand names, mastheads, trademarks, logos and domain names).	AN23

Term	Alternative Term(s)	Definition	SNA Code
Purchasers' price	-	The amount payable by the purchaser, excluding any deductible VAT or similar deductible tax, in order to take delivery of a unit of a good or service at the time and place required by the purchaser. This price includes any transport charges paid separately by the purchaser to take delivery at the required time and place.	-
Purchasing power parity	-	The number of units of country B's currency that are needed in country B to purchase the same quantity of an individual good or service as one unit of country A's currency will purchase in country A.	-
Quadruple-entry accounting	-	Simultaneous application of vertical and horizontal double-entry method, where each transaction results in four entries in the system: two for the instruments and two for the counterparties involved in the transaction.	-
Quasi-corporations	-	Unincorporated enterprises that operate as if they were a unit separate from their owner(s). They are treated as if they are a corporation.	-
Quasi-fiscal operations	-	Government operations carried out by institutional units other than general government units.	-
Real gross domestic income	-	The purchasing power of the income earned by all institutional units in an economic territory from the use of their labour and capital in the production of goods and services during an accounting period.	-
Reappraisals	-	Changes in the measured stock of assets due to the use of updated information that permits a reassessment of the size or value of the stock.	-
Reassignment	-	Rearrangement of a transaction by a third party on behalf of others as taking place directly between the two principal parties involved.	-
Re-exports	-	Goods produced in other economies, and previously imported with a change of economic ownership, that are exported with no substantial transformation from the state in which they were previously imported.	-
Reference period	-	Period, usually a year, quarter or month, which is used as a reference for compiling certain time series. Price and volume indices, including time series of volume estimates, typically have a certain period in the past as a reference point.	-

Term	Alternative Term(s)	Definition	SNA Code
Reference rate for the calculation of implicit financial services on loans and deposits	-	Interest rate used for the calculation of implicit financial services on loans and deposits between borrowers and lenders. If the lender receives L interest, and the borrower pays B interest, and the reference rate is R, then the service charge to the lender is R - L, and to the borrower B - R.	-
Re-imports	-	Domestically produced goods imported in the same state as previously exported, without any substantial transformation occurring on the goods while they were outside the territory.	-
Reinsurance	-	Insurance between one insurance corporation and another with the aim to spread the insurance risk.	-
Reinvested earnings on foreign direct investment	Reinvested earnings on direct investment (relevant for BPM)	Foreign direct investor's proportion of distributable income of a direct investment enterprise, less amounts declared for dividend distribution to direct investors, or less withdrawals from income of quasi-corporations by the direct investors. Reinvested earnings are treated as being distributed and subsequently reinvested.	D4123
Reinvestment of earnings	-	The entry in the financial account corresponding to reinvested earnings in the earned income account.	-
Remaining maturity	Residual maturity	Period from the reference date until the final contractually scheduled payment date. Also referred to as residual maturity.	-
Remuneration of employees	-	Total remuneration, in cash or in kind, payable by an enterprise to an employee in return for work done by the latter during the accounting period.	D1
Renewable energy resources	-	Energy resources which comprise the cumulative quantities of kinetic, radiative and thermal energy recoverable from moving water (hydro and ocean energy), moving air (wind energy), hot underground and surface rock and water (geothermal resources) and incident solar radiation (solar resources).	AN322
Rent	-	Income receivable by the owner of a non-produced natural resource or another non-produced non-financial asset (the lessor or landlord) for putting the asset at the disposal of another institutional unit (a lessee or tenant) for use in production.	D42
Rental	-	Amount payable by the user of a fixed asset to its owner, under an operating lease or similar contract, for the right to use that asset in production for a specified period of time. In the balance of payments, rentals are classified under different service categories depending on the underlying asset type.	-

Term	Alternative Term(s)	Definition	SNA Code
Requited transactions	Exchange transactions	Transactions in which one unit provides a good, service, asset, or labour to a second unit and receives a good, service, asset, or labour of equivalent value in return ("something for something"). This includes transactions where one unit compensates a second unit for the temporary use of an asset owned by the second unit.	-
Rerouting	-	Recording a transaction as taking place through channels that differ from the actual ones, or as taking place in an economic sense when no actual transactions take place.	-
Research and development	-	Value of creative work undertaken on a systematic basis to increase the stock of knowledge, including knowledge of humans, culture or society, and use of this stock of knowledge for the purpose of discovering or developing new products, including improved versions or qualities of existing products, or discovering or developing new or more efficient processes of production. This does not extend to including human capital as assets.	AN1151
Reserve deposits	-	Deposits at the central bank that other deposit-taking corporations use to satisfy reserve requirements for eligible liabilities.	-
Reserve position in the International Monetary Fund	-	The sum of a member's reserve tranche position and any indebtedness of the IMF in the General Resources Account (GRA) that is readily available to the member to meet balance of payments financing needs.	-
Reserve tranche position in the International Monetary Fund	-	Includes a member's reserve tranche and any indebtedness of the IMF (under a borrowing agreement) in the General Resources Account (GRA) that is readily available to the member country.	-
Residence	-	The economic territory with which an institutional unit has the strongest connection, i.e., its centre of predominant economic interest.	-
Resident units	-	Units that meet the criteria of residence in an economic territory.	-
Residual value of a non-financial asset	-	Amount that a unit would obtain from the disposal of an asset, after deducting the estimated costs of disposal, if the asset were already of the age and in the condition expected at the end of its useful life.	-
Resource management activities	-	Activities whose primary purpose is preserving and maintaining the stock of natural resources and hence safeguarding against depletion.	-

Term	Alternative Term(s)	Definition	SNA Code
Resource rent	Economic rent	Surplus value accruing to the extractor of a natural resources, or a user of an asset more generally, calculated after all intermediate costs, labour costs and the costs of fixed capital used have been taken into account.	-
Rest of the world	-	All non-resident institutional units that enter into transactions with resident units or that have other economic links with resident units.	S2
Restructuring agencies	-	Institutional units set up to sell corporations and other assets, and to reorganise companies. They may also be used for dealing with the defeasance of impaired assets or repayment of liabilities of insolvent entities, often in the context of a banking crisis.	-
Retained earnings of a corporation or quasi-corporation	Retained earnings	Distributable income less the dividends payable or less the withdrawals from income of quasi-corporations, respectively.	-
Revenues	-	Transactions that add to the amount of economic value of a unit or sector.	-
Reverse repos	-	Repos viewed from the perspective of the securities taker (cash provider).	-
Reverse transactions	-	Contractual arrangements involving a change of legal ownership of securities, gold or other assets (e.g., commodities) with a commitment to repurchase the same or similar securities, gold or other assets, either on a specified date or with open maturity.	-
Saving	-	Amount that represents the part of disposable income (adjusted for the change in pension entitlements) that is not spent on final consumption.	B8
Seasonal adjustment	-	Method to remove seasonal and calendar effects from short term indicators.	-
Seasonality	-	Pattern repeating on a regular basis in the same period of each year.	-
Secondary activity	-	Activity carried out by (a part of) an enterprise in addition to the principal activity, and whose output, like that of the principal activity, must be suitable for delivery to other units.	-
Securities	-	Debt and equity instruments that have the characteristic feature of negotiability, i.e., their legal ownership is readily capable of being transferred from one unit to another unit by delivery or endorsement.	AF3+AF511+AF52

Term	Alternative Term(s)	Definition	SNA Code
Securities lending	-	Contractual arrangement whereby a security holder transfers securities to another party (security taker), subject to the stipulation that the same or similar securities be returned on a specified date or on demand.	-
Securities repurchase agreement	Repo	Contractual arrangements involving the sale of securities for cash, at a specified price, with a commitment to repurchase the same or similar securities at a fixed price either on a specified future date or with an "open" maturity.	-
Securitisation	-	Creation and issuance of debt securities for which coupon or principal payments (or both) are backed by specified financial assets, non-financial assets or future income streams.	-
Securitisation vehicle	-	Financial corporation that specialises in issuing securities backed by specified financial assets, non-financial assets or future income streams.	-
Security tokens	-	Crypto assets that represent debt or equity claims on the issuer or derivative contracts that can be exchanged peer-to-peer even if the underlying asset is not a crypto asset.	-
Self-employed persons	-	Persons who are the sole or joint owners of the unincorporated enterprises in which they work, excluding those unincorporated enterprises that are classified as quasi-corporations.	-
Services	-	Results from a production activity that changes the conditions of the consuming units, or facilitates the exchange of products, non-produced non-financial assets or financial assets. Services are not generally separate items over which ownership rights can be established and cannot generally be separated from their production.	-
Shares	-	Negotiable financial instruments representing claims on the residual value of a corporation after the claims of all creditors have been met.	AF511+AF512
Shariah	-	The practical divine law deduced from its legitimate sources: the Qur'ān, Sunnah, consensus (ijmā'), analogy (qiyās) and other approved sources of the Shariah.	-
Short position	-	Position when an institutional unit sells securities for which it is not the economic owner.	-
Short-term maturity	Short-term	Maturity of one year or less or payable on demand.	-

Term	Alternative Term(s)	Definition	SNA Code
Significant influence	Significant degree of influence	Power to participate in the financial and operating policy decisions of a unit but not control those policies. Significant influence may be gained by an ownership interest, statute or agreement. In the case of foreign direct investment, a direct investor is considered to have a significant degree of influence if it owns between 10 and 50 per cent of the voting power in a direct investment enterprise.	-
SNA interest	Pure interest (relevant for BPM)	The pure interest that financial corporations charge for loans or provide for deposits, i.e., after accounting for implicit financial services on loans and deposits.	-
Social assistance	-	Arrangement organised by government units or non-profit institutions serving households to provide current transfers that meet the same needs as social insurance schemes, but without any requirement to participate in a social insurance scheme through the payment of contributions.	-
Social assistance benefits in cash	-	Social benefits payable in cash by government units or non-profit institutions serving households (NPISHs) to households, to meet the same needs as social insurance benefits, but without any requirement to participate in a social insurance scheme through the payments of social contributions.	D623
Social benefits	-	Current transfers receivable by households intended to provide for the needs that arise from certain events or circumstances, for example, sickness, unemployment, retirement, housing, education or family circumstances.	-
Social benefits other than social transfers in kind	-	Social benefits other than goods and services provided by government or non-profit institutions serving households either free or at prices that are not economically significant. They consist of social security benefits in cash, other social insurance benefits, and social assistance benefits in cash.	D62
Social capital	-	The social norms, shared values and institutional arrangements that foster co-operation within or among groups.	AN7X
Social contributions	Social insurance contributions	Actual and imputed contributions payable to social insurance schemes in order for a designated beneficiary to be entitled to receive the social benefits covered by the scheme.	D61g
Social contributions - employers' actual	Employers' actual social contributions; Actual employers' social contributions	Actual contributions payable by employers to social security funds and other social insurance schemes, to obtain entitlement to social benefits for their employees.	D611

Term	Alternative Term(s)	Definition	SNA Code
Social contributions - employers' imputed	Employers' imputed social contributions; Imputed employers' social contributions	Imputed contributions payable by employers in order to deliver non-pension social benefits paid directly by employers to their employees, ex-employees and other eligible persons, and pension benefits under a defined benefit pension scheme. It is calculated as a residual after accounting for employers' and households' actual contributions.	D612
Social contributions - households' actual	Households' actual social contributions	Social contributions payable on their own behalf by employees or self-employed persons, which may include persons temporarily without employment, to social insurance schemes.	D613
Social contributions - households' supplements	Households' social contribution supplements	Investment income earned during the accounting period on the stock of pension and non-pension entitlements.	D614
Social contributions less service charges	Social insurance contributions less service charges	Actual and imputed contributions payable to social insurance schemes to make provision for social benefits to be paid, less any fees charged by the administrators of the schemes.	D61
Social debt securities	-	Debt securities where the use of proceeds is restricted to financing or refinancing activities or projects that improve the condition of society.	AF3ow11
Social insurance benefits	-	Social benefits payable because the beneficiary participates in a social insurance scheme and the social risk insured against has occurred. They consist of social security benefits in cash and other social insurance benefits.	-
Social insurance schemes	Social insurance	Schemes where a third party, usually an employer or the government, encourages or obliges designated groups of individuals to participate in a scheme to provide for the needs that arise from certain events or circumstances, for example, sickness, unemployment, retirement, housing, education or family circumstances. Included are both social security schemes (which cover the entire community or large sections of it and are imposed, controlled, and financed by government) as well as other employment-related schemes.	-
Social protection	-	All interventions from public or private bodies intended to relieve households and individuals of the burden of a defined set of social risks or needs provided that there is neither a simultaneous reciprocal nor an individual arrangement involved. The risks and needs are sickness/ health care, disability, old age, survivors, family/ children, unemployment, housing and social exclusion not elsewhere classified.	-

Term	Alternative Term(s)	Definition	SNA Code
Social risks	-	Events or circumstances that relate to the characteristics of individuals and/or households – for example, age, health, poverty and employment status; and may adversely affect the welfare of individuals and/or households, either by imposing additional demands on their resources or by reducing their income.	-
Social security benefits in cash	Social security benefits in cash	Social benefits payable in cash by social security funds to households, requiring the participation in a social insurance scheme through the payment of social contributions.	D621
Social security contributions	-	Amounts payable to a social security scheme in order for a designated beneficiary to be entitled to receive the social benefits covered by the scheme.	-
Social security funds	-	A particular kind of government unit that is devoted to the operation of one or more social security schemes.	S1314
Social security schemes	Social security	Social insurance schemes covering the community as a whole, or large sections of the community, and are imposed and controlled by government units.	-
Social transfers in kind	-	Goods and services provided to households by government and NPISHs either free or at prices that are not economically significant.	D63
Sovereign wealth funds	-	Units created and owned by the general government for macroeconomic purposes, hold, manage or administer assets to achieve financial objectives, and employ a set of investment strategies which include investing in foreign financial assets. The funds are commonly established out of balance of payments current account surpluses, official foreign currency operations, the proceeds of privatisations, fiscal surpluses, and/or receipts resulting from commodity exports.	-
Special Drawing Rights	-	Reserve assets created by the International Monetary Fund and allocated to its members to supplement existing reserve assets.	AF12

Term	Alternative Term(s)	Definition	SNA Code
Special purpose entity	-	A formally registered and/or incorporated legal entity recognized as an institutional unit and resident in an economy, with no or little employment up to maximum of five employees, no or little physical presence, and no or little physical production in the host economy. SPEs are directly or indirectly controlled by non-residents. SPEs are established to obtain specific advantages provided by the host jurisdiction with an objective to (i) grant its owner(s) access to capital markets or sophisticated financial services; and/or (ii) isolate owner(s) from financial risks; and/or (iii) reduce regulatory and tax burden; and/or (iv) safeguard confidentiality of their transactions and owner(s). SPEs transact almost entirely with non-residents and a large part of their financial balance sheet typically consists of cross-border claims and liabilities.	-
Spot exchange rate	-	The current exchange rate at which one currency can be exchanged for another currency.	-
Spot price	-	The current price in the marketplace at which a given asset—such as a security, commodity, or currency—can be bought or sold for immediate delivery.	-
Stablecoins	-	A crypto asset that aims to maintain a stable value relative to a specified asset, or a pool or basket of assets.	-
Standardised guarantees	-	Guarantees that are not provided by means of a financial derivative (such as credit default swaps) but for which the probability of default can be well established. Standardised guarantees are issued in large numbers, usually for fairly small amounts, along identical lines.	-

Term	Alternative Term(s)	Definition	SNA Code
State government	-	Part of general government that includes all institutional units exercising some of the functions of government at a level below that of central government and above that of the governmental institutional units existing at a local level. They are institutional units whose fiscal, legislative and executive authority extends only over the individual “states” into which the country as a whole may be divided, as well as those non-market producers controlled by state governments. States may be described by different names in different countries and the subsector may consist of state, provincial, or regional governments. Social security funds organized and managed by different levels of government are typically classified in a separate subsector of general government. Alternatively, social security funds that are organized and managed by the state governments could be included in the state governments subsector.	S1312
Statistical discrepancy	-	Statistical imbalances stemming from imperfections in source data and compilation. In the balance of payments, it is used to show the difference between net lending/net borrowing derived from the financial account and net lending/net borrowing from the current and capital accounts.	-
Stocks	Positions	Levels of financial/non-financial assets or liabilities at a point in time. In the case of financial assets/liabilities, usually the term "positions" is used while for levels of non-financial assets, the term "stocks" is often applied.	-
Stripped securities	Strips	Securities that have been transformed from a principal amount with coupon payments into a series of zero-coupon bonds, with a range of maturities matching the coupon payment date(s) and the redemption date of the principal amount(s).	-
Subscription rights	-	Rights for corporate shareholders to participate in the acquisition of shares newly issued by the corporation.	-
Subsidiary	-	Direct investment enterprise over which the direct investor is able to exercise control. It could also refer to domestic relationships.	-
Subsidies	-	Current unrequited payments that government units, including non-resident government units, make to enterprises on the basis of the levels of their production activities or the quantities or values of the goods or services that they produce, sell, export or import.	D3

Term	Alternative Term(s)	Definition	SNA Code
Subsidies on products	-	Subsidies payable per unit of a good or service.	D31
Sukuk	-	Investment certificates issued by Islamic financial institutions to obtain funding. Sukuk (plural of sakk, known as Islamic bonds) are certificates, with each sakk representing a proportional undivided ownership right in tangible and intangible assets, monetary assets, usufruct, services, debts or a pool of predominantly tangible assets, or a business venture (such as mudaraba or musharaka). These assets, which must be clearly identifiable, may be in a specific project or investment activity in accordance with Shariah rules and principles.	-
Super dividends	-	Large and irregular payments made by corporations to their shareholders or owners that are funded from accumulated reserves or sales of assets other than cash. If the distributable income is positive, the difference between the payment and the distributable income of the relevant accounting period is recorded as a super dividend under withdrawal of equity. The remainder of the payment (equal to the distributable income) is recorded as a dividend. If the distributable income is negative, the entire dividend payout is recorded as a super dividend under withdrawal of equity. The concept of super dividends does not apply to foreign direct investment where distributions from accumulated reserves are also treated as dividends. However, in the case of foreign direct investment, any additional distributions, e.g., from sales of assets, are recorded as withdrawal of equity.	-
Supplementary items	-	Items outside the standard presentation and compiled based on the specific circumstances of the economy, taking into account the interests of policymakers and analysts as well as resource costs.	-
Supply table	-	Table showing the supply of goods and services by product, and by domestic producing industry and imports. The supply table at purchasers' prices consists of a domestic output matrix at basic prices with rows corresponding to products and columns corresponding to industries (matching the body of the use table) and additional columns for imports and valuation adjustments necessary to have total supply of each product valued at purchasers' prices.	-

Term	Alternative Term(s)	Definition	SNA Code
Sustainability debt securities	-	Debt securities where the use of proceeds is restricted to financing or refinancing activities or projects that improve the condition of the environment and society.	AF3ow13
Sustainability-linked debt securities	-	Debt securities in which certain characteristics, such as the associated cash flows, are linked to achieving performance objectives that improve the condition of the environment and/or society.	AF3ow14
Swaps	Swap contracts	Contractual arrangements where the counterparties exchange financial instruments or cash flows based on the reference prices of the underlying items, in accordance with prearranged terms.	AF71S14
Synthetic securitisation	-	Arrangement that involves transfer of the credit risk related to a pool of assets without transfer of the assets themselves, either through a securitisation unit or through the direct issuing of debt securities by the original asset owner.	-
Takaful	-	Mutual guarantee in Islamic finance in return for the commitment to donate an amount in the form of a specified contribution to the participants' risk fund, whereby a group of participants agree among themselves to support one another jointly for the losses arising from specified risks.	-
Tax credits	-	Amounts that are subtracted directly from the tax liability due by the beneficiary household or corporation after the liability has been computed.	-
Taxes	-	Compulsory, unrequited payments, in cash or in kind, made by institutional units to government units.	-
Taxes and duties on imports excluding VAT	-	Taxes on goods and services (except VAT) that become payable at the moment when goods enter the economic territory or when services are delivered by non-resident producers to residents.	D212
Taxes less subsidies on production	-	Taxes payable or subsidies receivable on goods or services produced as outputs and other taxes or subsidies on production, such as those payable on the labour, machinery, buildings or other assets used in production.	D2 - D3
Taxes on capital transfers	-	Taxes on the values of assets transferred between institutional units. They consist mainly of inheritance taxes, or death duties, and gift taxes, including gifts inter vivos made between members of the same family to avoid, or minimize, the payment of inheritance taxes. They do not include taxes on sales of assets as these are not transfers.	-

Term	Alternative Term(s)	Definition	SNA Code
Taxes on imports excluding VAT and import duties	-	Taxes (except VAT and import duties) that become payable when goods enter the economic territory or services are delivered by non-resident producers to residents.	D2122
Taxes on income	-	Taxes payable on incomes, profits and capital gains.	D51
Taxes on production and imports	-	Compulsory, unrequited payments levied by government in respect of production or import of goods and services.	D2
Taxes on products	-	Taxes payable per unit of a good or service.	D21
Taxes on products, excluding VAT, import and export taxes	-	Taxes on goods and services that become payable as a result of the production, sale, transfer, leasing or delivery of those goods or services, or as a result of their use for own consumption or own capital formation.	D214
Term life insurance	-	In contrast to life insurance, term life insurance benefits are payable only on the death or incapacity of the insured within a specified time period; therefore, term life insurance is included in non-life insurance.	-
Terminal costs	-	Costs incurred on the disposal of an asset or at the end of its service life. These cover, for example, de-installation and decommissioning costs (in case of oil rigs or nuclear power stations) or rehabilitation costs of land sites.	-
Terms of trade	-	Ratio of the price of exports to the price of imports.	-
Total gross debt	Total debt / total debt liabilities	The sum of all liabilities that are debt instruments.	-
Total remittances	-	The sum of personal remittances and cross-border social benefits.	-
Trade credit and advances	-	Credit in the form of deferred payment extended directly by the sellers of goods and services to the purchasers; and advances for work that is in progress (or is yet to be undertaken), and prepayment by purchasers for goods and services not yet provided.	AF81
Transactions	-	Economic flows that are interactions between institutional units by mutual agreement or through the operation of the law, or actions within an institutional unit that are analytically useful to treat like transactions because the unit is operating in two different capacities.	-
Transactor principle (BPM)	-	Principle whereby cross-border transactions-are allocated to the economy of residence of the non-resident party to the transaction (the transactor).	-

Term	Alternative Term(s)	Definition	SNA Code
Transfer income account	-	Account that records the distribution of income between institutional units via current transfers. In the context of the external accounts, this account records current transfers between residents and non-residents.	-
Transfer pricing	-	Valuation of transactions between affiliated enterprises.	-
Transferable deposits	-	Deposits that are exchangeable for currency (including their digital versions) on demand at par and without penalty or restriction; and directly usable for making payments by check, draft, giro order, direct debit or credit or other direct payment facility.	AF23
Transfers	-	Transactions in which one institutional unit provides a good, service or asset to another unit without receiving from the latter any good, service or asset in return as a direct counterpart.	-
Transfers not elsewhere classified (GFS)	-	All transfers other than taxes, grants, social contributions, social benefits, and fines penalties, and forfeits. As a government expense then subsidies are also excluded, but within government revenue subsidies are treated within transfers not elsewhere classified.	-
Transit trade	-	Goods crossing a country on their way to final destination, which are generally excluded from foreign trade statistics, balance of payments and national accounts of the country in transit.	-
Transport equipment	-	Equipment for moving people and objects.	AN1131
Tree, crop and plant resources yielding repeat products	-	Trees, crop and plant resources yielding repeat products whose natural growth and regeneration are under the direct control, responsibility and management of institutional units. They include trees (including vines and shrubs) cultivated for fruits and nuts, for sap and resin and for bark and leaf products. Trees grown for timber that yield a finished product once only, just as cereals or vegetables that produce only a single crop, are excluded.	AN3312
Tri-party repos	-	Repos mediated by a third party, typically a custodian bank or central counterparty, to reduce counterparty risk for the lender.	-
True-sale securitisation	-	Debt securities issued by a securitisation unit where the underlying assets have been transferred from the original asset owner's (i.e., the originator's) balance sheet to that of the securitisation unit.	-

Term	Alternative Term(s)	Definition	SNA Code
Trust	-	Legal arrangement by which property is held in the name of one party or parties (the trustee) who is under a fiduciary obligation to hold assets for the benefit of another party or parties (the beneficiary or beneficiaries).	-
Ultimate controlling parent	-	Entity that ultimately controls an enterprise, identified by proceeding up the ownership chain from the enterprise through the controlling links (ownership of more than 50 per cent of the voting power) until an individual, household, or company that is not controlled by another company is reached. If there is no company, individual, or household that controls the resident company, then the resident company may be considered to be its own ultimate controlling parent.	-
Ultimate host economy	-	The economy of the final destination for direct investment.	-
Ultimate investing economy	-	The economy in which the ultimate controlling parent is resident.	-
Unallocated gold accounts	-	Accounts that do not give the holder the title to physical gold, but provide a claim against the account operator to deliver gold.	-
Uncompensated seizures	-	Governments or other institutional units taking possession of assets of other institutional units without compensation, for reasons other than payment of taxes, fines, etc.	K4
Unemployed persons	Unemployment	Persons who are not employed but available for work and actively seeking work for pay or profit.	-
Unincorporated enterprise	-	Enterprise representing the production activity of a government unit, the central bank, non-profit institution serving households (NPISH) or household that cannot be treated separately as the production activity of a quasi-corporation.	-
Unit of account	-	A standard for denominating the prices of goods and services, and the values of financial instruments and non-financial assets, thereby providing a means for comparisons of values and for preparation of financial accounts. Unit of account is one of the basic functions of money. For most of economies, the unit of account is the national currency, and for others another currency (e.g., U.S. dollars) may be used. The accounts are compiled in the unit of account.	-

Term	Alternative Term(s)	Definition	SNA Code
Unit value index	-	Index that measures the change in the average value of a basket of products or inputs that are not homogeneous and which may therefore be affected by changes in the mix of items as well as by changes in their prices.	-
Unlimited liability entity	-	A legal entity where the owners or partners are personally liable for all the debts and obligations of the business.	-
Unlisted shares	Unquoted shares	Equity securities that are not listed on an exchange (also known as unquoted shares).	AF512
Unrequited transactions	-	Payments in cash or kind from one institutional unit to another with nothing in return.	-
Use of Fund credit	-	International Monetary Fund member's outstanding purchases of Fund resources through the General Resources Account, the counterparts of which are increases in the member's domestic currency liabilities to the Fund.	-
Use table	-	Table showing the use of goods and services by product type, and by type of use for both intermediate and final users. The use table at purchasers' prices covers all products consumed in an economy arranged in the form of a matrix with rows corresponding to the products valued at purchasers' prices, with columns corresponding to industries (matching the body of the supply table) and final uses, including an additional column for exports. Also shown is gross value added by industry.	-
Utility tokens	-	Fungible crypto assets that provide the holders future access to goods or services. They are classified as a separate sub-category under debt securities.	AF35
Valuables	-	Products of considerable value that are not used primarily for purposes of production or consumption but are held as a store of value over time. Examples are precious metals and stones, antiques, paintings, sculptures or other art objects.	AN13
Value added	-	Contribution to the economy by a producer or an industry or an institutional sector, which is estimated by the total value of output produced and deducting the total value of intermediate consumption of goods and services used to produce that output.	B1
Value added type taxes	Value added tax (VAT)	Taxes on goods or services collected in stages by enterprises but that are ultimately charged in full to the final purchasers.	D211

Term	Alternative Term(s)	Definition	SNA Code
Variable-rate debt instruments	-	Debt instruments for which interest is linked to a reference index (e.g., a specific interest rate index, the price of a specific commodity, or the price of a specific financial instrument) that normally changes over time in a continuous manner in response to market conditions. All other debt instruments should be classified as fixed-rate. An interest rate that is adjusted, but only at intervals of more than a year is considered to be fixed.	-
Vertical double-entry bookkeeping	Double-entry bookkeeping	Principle whereby each transaction leads to at least two corresponding entries, usually referred to as a credit entry and a debit entry, in the books of the transactor. It is similar to the double-entry bookkeeping applied in business accounting.	-
Volume estimates	-	Time series of data on goods and services expressed in prices of a certain reference period, thus adjusted for changes in prices. As nowadays each year's values are typically deflated by a price index with a different base year, it is no longer strictly correct to describe the resulting time series in this way. More accurate terms are "chain volume series", "chain volume measures" or "chain volume indexes", if the series are expressed in index number form. If it is desirable to specify the reference year in the term, then "chain volume series in reference year [currency units]" may be used.	-
Volume index	-	Index showing the average of the proportionate changes in the quantities and qualities of a specified set of goods or services between two periods of time.	-
Wages and salaries	-	Remuneration of employees payable in cash and/or in kind, except for social contributions payable by employers.	D11
Waqf funds	-	A religious/charitable endowment, with the donated assets held by a charitable trust.	-
Warrants	-	Tradable financial instruments which give the holder the right but not the obligation to buy from or sell to the issuer of the warrant a fixed amount of an underlying asset, such as shares or bonds. Although similar to other traded options, a distinguishing factor is that the exercise of the warrants can create new securities, thus diluting the capital of existing bond- or shareholders.	-

Term	Alternative Term(s)	Definition	SNA Code
Water resources	-	Surface and groundwater resources used for extraction to the extent that their scarcity leads to the enforcement of ownership and/or use rights, market valuation and some measure of economic control.	AN34
Weapons systems	-	Arms for military purposes meeting the asset boundary. They include vehicles and other equipment such as warships, submarines, military aircraft, tanks, missile carriers and launchers, etc.	AN114
Withdrawals from income of quasi-corporations	-	Part of distributable income that the owner withdraws from the quasi-corporation.	D4122
Work-in-progress (excluding produced natural resources)	-	Output that is not yet sufficiently processed to be in a state in which it is normally supplied to other institutional units. Work in progress related to biological resources is excluded, and grouped together with other natural resources.	AN122
Work-in-progress on cultivated biological resources	-	Output of animal resources and tree, crop and plant resources that is not yet sufficiently mature to be in a state in which it is normally supplied to other institutional units. Examples are immature livestock raised for slaughter, trees and other vegetation yielding once-only products, and immature biological resources yielding repeat products, such as breeding stocks, dairy cattle, and trees cultivated for fruits and the like.	AN333
Work-in-progress on cultivated biological resources yielding once-only products	-	Output of animal resources and tree, crop and plant resources yielding once-only products that is not yet sufficiently mature to be in a state in which it is normally supplied to other institutional units. Examples are immature livestock raised for slaughter, trees and other vegetation yielding once-only products.	AN3332
Work-in-progress on cultivated biological resources yielding repeat products	-	Output of animal resources and tree, crop and plant resources yielding repeat products that is not yet sufficiently mature to be in a state in which it is normally supplied to other institutional units. Examples are immature biological resources yielding repeat products, such as breeding stocks and dairy cattle.	AN3331
Write-off	-	Unilateral cancellation of debt by the creditor on recognition that a financial claim can no longer be collected due to bankruptcy or other factors.	-
Written-down replacement cost	-	Current acquisition price of an equivalent new asset minus the accumulated depreciation, amortisation or depletion.	-

Term	Alternative Term(s)	Definition	SNA Code
Yield on a financial asset	-	Total return on a financial asset.	-
Zakah	-	Obligatory payment made under Shariah on certain kinds of property and used for charitable and religious purposes.	-
Zero-coupon bonds	-	Debt securities that have a single payment at maturity and no coupon payments.	-