

Guide to statistics in European Commission development cooperation

VOLUME 3: ECONOMIC STATISTICS

2021 edition



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Foreword

Reliable and relevant statistics are essential for all aspects of public discourse and for holding governments accountable. They constitute a key tool for governments and policy makers to measure progress towards development goals and provide information about the effectiveness of policies and programmes.

This Guide provides extensive information on statistics in development cooperation, presenting key international initiatives supporting developing countries in building sustainable statistical systems that produce quality statistics. It provides information on how to identify and develop actions in support of key statistics and how to use data and indicators to define and follow-up cooperation programmes.

This edition also includes various key developments, including the sustainable development goals (SDGs) and the SDG indicators framework, the UN World Data Forum and other related initiatives. The implementation of development programmes aimed at achieving the SDGs has further raised the demand for high-quality statistics in this area.

The EU is the biggest provider of development assistance in the world. In the area of statistics, the European Commission, together with the EU Member States, is highly involved in the field of international statistical cooperation, with Eurostat — the Statistical Office of the EU — at the forefront of developing methodology and instruments for harmonised and reliable statistics. This publication is intended to support EU Delegations around the world, as well as various EU/EC services, and more generally, those involved in implementation of statistical cooperation programmes.

For a non-statistician, the Guide explains how national statistical systems are organised and how they function, the central role of national statistical offices, as well as core international quality frameworks and principles for statistics. Overall, the Guide has been designed as a dynamic, interactive tool providing technical references and guidance on statistics, through hundreds of active hyperlinks for further information.

This updated version of the Guide is the fifth consecutive edition; the first edition was published a decade ago. To make the Guide easier to use, it has been divided into a core volume, supplemented by chapters that present statistics and statistical processes in specific sectors (gathered into a set of four thematic volumes): Sustainable Development Goals and indicators; social statistics; economic statistics and; environment and climate change statistics. With the exception of the volume on economic statistics, the whole publication has been updated for this edition.

Since the start of 2020, the world has been under immense strain from the COVID-19 pandemic and its repercussions. The setback caused by the pandemic and its dire consequences for finances and capacity in many societies may further amplify the challenges. The need for support through capacity development and technical assistance is therefore more vital than ever. In this context, the demand for data and statistics to monitor and evaluate this dynamic situation has become proportionally greater, with a requirement for new statistics and more rapid results.

I hope you will find this new edition of the Guide useful. As always, Eurostat welcomes any feedback and ideas on how to develop it further.



Mariana Kotzeva

Director-General, Eurostat

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All statements on policies within this publication are given for information purpose only. They do not constitute an official policy position of European Commission and are not legally binding.

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Introduction: The guide to the Guide

Why a Guide to statistics in European Commission development cooperation and who should read it?

'I have no data yet. It is a capital mistake to theorise before one has data. Insensibly one begins to twist facts to suit theories, instead of theories to suit facts...'

Sherlock Holmes in 'A Scandal in Bohemia' by Sir Arthur Conan Doyle, 1891

The purpose of the Guide to statistics in European Commission development cooperation is to explain why statistics are important for development cooperation, how to use them and what needs to be done to make them available. It is not intended to be a course in statistics and statistical methods. Alternative and additional reading is shown in the 'To find out more' box at the end of each section.

The Guide is the fruit of a close cooperation amongst Commission services and international stakeholders in statistical co-operation for development. It is principally aimed at supporting EU staff working in development cooperation, especially in EU delegations. However, it is also relevant to other actors in statistical development programmes. In particular, it aims to aid practitioners who need to know more about statistics in development cooperation context. The Guide explains why and how statistics are relevant to their work and what they need to do in various situations. It provides the information required for Commission staff to undertake the following tasks:

- Use statistical indicators to design and monitor development programmes;
- Identify and develop statistics support actions;
- Promote the use of statistics at each stage of the aid cycle;
- Advocate for early consideration of which statistics and indicators will be needed for implementation, evaluation and impact assessment (and what is required to obtain these).

The Guide aims to answer a number of basic questions about development statistics:

- Part A, this Introduction, is a guide to when and how to consult the Guide
- Part B: Statistics in Development looks at why and how statistics enter the development process and how to understand and check data
- Part C: Support for Statistics considers when and how the European Community needs to act to make sure that good quality statistics are available to support its development goals
- Parts A-C are completed by four thematic volumes dealing with the use of Statistics for Policy Issues. Chapters in these volumes look at how statistics can be used and supported to achieve European Commission policy aims in specific sectors.

When arguing that statistics are important but bread is more urgent, one should ask oneself on what information the answers to the following questions are based: 'How much bread?' and 'Where is it needed?' Development fundamentally is about people and about eliminating poverty. In order to manage the process, it is essential to measure it. While statistics may not directly reduce poverty or hunger, they are an essential component of a complex process; without adequate statistical data it is by no means certain that actions to reduce poverty will be directed at the right problem, that they will be effective or that they will result in sustained improvements.

It is obvious that good and reliable statistics are necessary to donors, in order to assess where aid is most needed, to use resources efficiently, to measure progress and to evaluate results. There is broad consensus that the Sustainable Development Goals (SDGs) identify the desired outcomes as well as the means for measuring progress. Thus, statistics are vital to 'Managing for Development Results' with shared accountability and focus on results.

A key issue is the need for good country-specific and country-owned policies and institutions. Better statistical data and improved analysis can create a political will for changes. Without good statistics, governments cannot deliver efficient administration, good management, and evidence-based policymaking. An effective and efficient national statistical system, providing regular and reliable data on the economy and the well-being of the population, is an important indicator of good policies and a crucial component of good governance.

Statistics also provide a means for the media, non-governmental organisations and any citizen to monitor the activities of government. The ability to provide regular and reliable data on the economy and the well-being of the population is an important indicator of good policies and institutions. When the statistical system produces quality data which is trusted by the public, transparency increases and accountability is promoted. The quality and availability of data depend on the capacity of the institutions involved in the national statistical system, which are often undervalued and underfunded.

This Guide, and in particular this volume, will help you find what you want to know about economic statistics.

How to read this volume of the Guide

There are text boxes at the start and end of each chapter. The chapter in brief box starts each chapter and provides a summary of one to two paragraphs. Most sections and each sector chapter end with a 'To find out more' box, which provides references, hyperlinks and supporting information for further research.

The table of contents is provided in detail so that most key issues can be found easily. Hyperlinks are also provided to Eurostat's Concepts and Definitions Database (CODED) and OECD's Glossary of Statistical Terms, as well as to the International Statistical Institute's (ISI) Multilingual Glossary of Statistical Terms.

The Guide is prepared primarily to be used as an electronic document to be disseminated in PDF format. To navigate through the text and find related information, the user can simply click on the interactive links from the Table of Contents. To consult external references over the Internet, the user just has to click on the hyperlinks in the 'To find out more' boxes. The user may also use the normal 'search' facility for PDF documents to find the information of interest, searching on specific keywords or key terms.

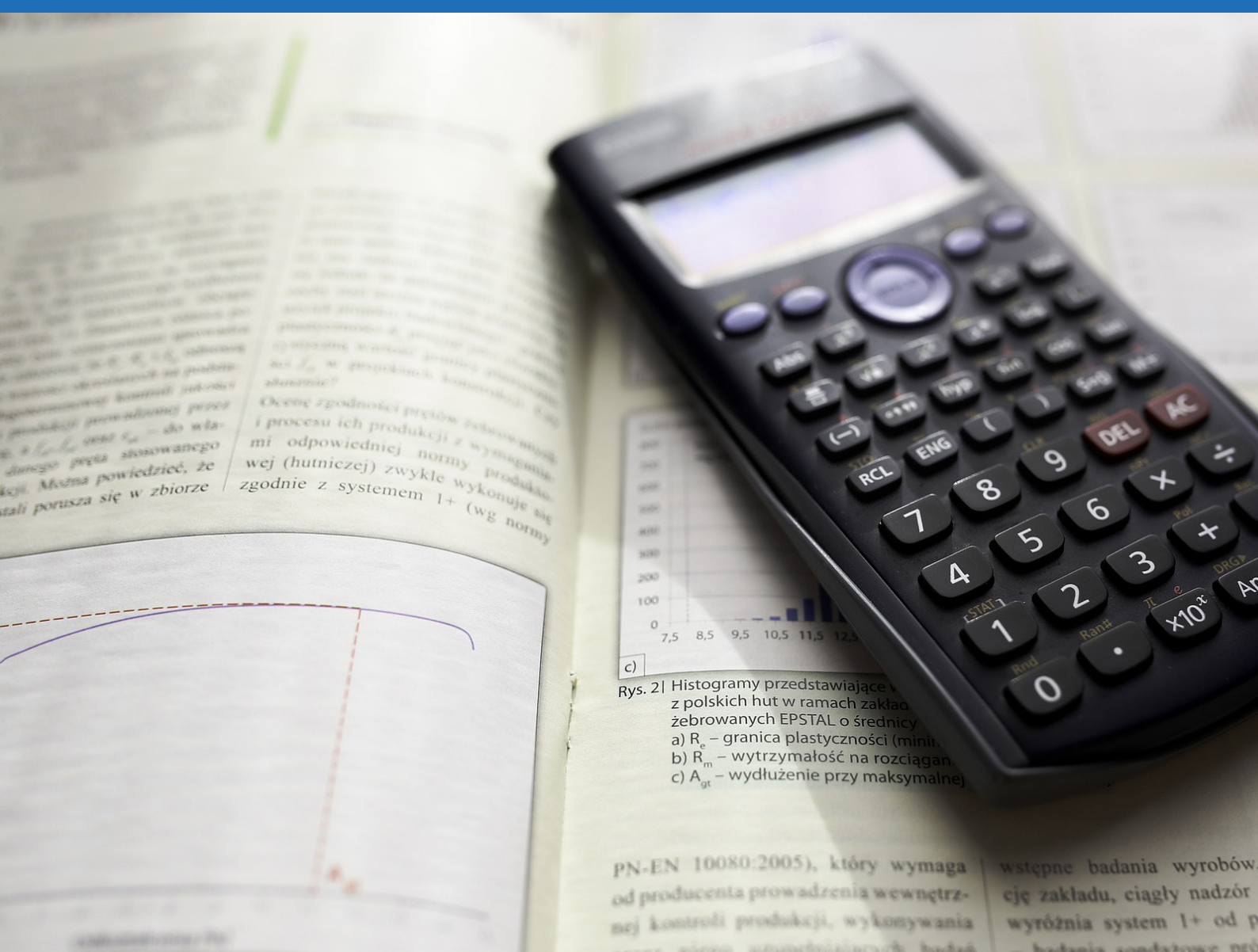
To find out more...

These boxes, provided at the end of most sections, summarise reference documents and in most cases give hyperlinks to them, e.g.:

- [Eurostat's Concepts and Definitions Database \(CODED\)](#)
- [OECD's Glossary of Statistical Terms](#)
- [International Statistical Institute's \(ISI\) Multilingual Glossary of Statistical Terms](#)
- [European Consensus on Development](#)
- [Conference of European Statisticians: Classification of Statistical Activities \(CSA\)](#)

V3.1

National accounts (incl. GDP), economic accounts and the non- observed economy



V3.1. National Accounts, economic accounts and the non-observed economy

The chapter in brief

The main focus of this chapter is National Accounts, dealing with topics like implementation of the 1993 System of National Accounts (1993 SNA) and update to the 2008 System of National Accounts (2008 SNA).

This chapter also gives the definition of Gross Domestic Product (GDP) and Gross National Income (GNI). It gives a short overview of the institutional sector accounts, the Supply and Use Tables and input-output Tables, etc. It also gives an overview of statistical data required for the National Accounts compilation in current and constant prices.

The monitoring of a country's economy requires up-to-date and reliable National Accounts information on the structure and developments of the economic situation. The National Accounts information should also be comparable with the National Accounts information for other countries in the same region and for other ACP countries. It should also comply with international recommendations as given in 1993 SNA and 2008 SNA.

The Non-Observed Economy is discussed, as well as the production borderline which is drawing a line between what should be included in the National Accounts concept of production and what to exclude.

Box V3.1.1: Historic and prevailing versions of the System of National Accounts (SNA) and the European System of Accounts (ESA)

The objective of both the System of National Accounts (SNA) and the European System of Accounts (ESA) is to provide a comprehensive conceptual and accounting framework for compiling and reporting macroeconomic statistics for analysing and evaluating the performance of an economy.

The **1953 SNA** was published under the auspices of the UNSC. It consisted of a set of six standard accounts and a set of 12 standard tables presenting detail and alternative classifications of the flows in the economy.

The **1968 SNA** (the Blue Book) extended the scope of the National Accounts substantially by adding Supply and Use Tables, input-output tables, complete institutional sector accounts and balance sheets. It was also giving more attention to estimates at constant prices. With the 1968 SNA, a comprehensive effort was made to bring the SNA and the Material Product System (MPS), used in the centrally planned economies, closer together.

The **1993 SNA** represented a major advance in national accounting and embodies the result of harmonizing the SNA and other international statistical standards more completely than in previous versions. 1993 SNA is co-signed by the United Nations, the International Monetary Fund, the OECD, the World Bank and the European Commission.

The **ESA 1995** is compatible with the 1993 SNA, but include additional details. The EU member countries have been obliged to implement the 1995 ESA.

The **2008 SNA**, The United Nations Statistical Commission called for an update of the 1993 SNA in 2003 to bring the SNA into line with the new economic environment, advances in methodological research and user needs. The 2008 SNA was prepared by the **Inter-Secretariat Working Group on National Accounts (ISWGNA)**, which consists of: the IMF, the OECD, the UN Statistics Division and regional commissions of the UN, the World Bank and Eurostat. The 2008 SNA is published jointly by these five organisations.

The **ESA 2010** is compatible with the 2008 SNA and will be accompanied by a new ESA transmission programme, intended to provide the legislative basis for the EU member countries for the transmission of National Accounts data to Eurostat from 2014.

Essential objectives of both the 1993 SNA and the 2008 SNA are harmonisation between the National Accounts system and the other related systems of statistics such as IMF Balance of Payment Statistics, IMF Government Finance Statistics and IMF Banking Statistics' Accounts.

V3.1.1. Policy applications: what this data are used for

Today's National Accounts are the core of a modern system of economic statistics. The National Accounts are the main instrument for observing the economy as a whole, the economic growth and the macroeconomic policy. The National Accounts are also a key policy indicator.

International organisations, analysts and policy makers pay great attention to the evolution of GDP and to other National Accounts variables such as final consumption, capital investment, saving, etc.

In addition to annual National Accounts figures, quarterly data are also available for some developing countries.

The National Accounts figures are highly dependent on the quality of the statistical system that exists in a given country. For international comparisons it is important to remember that the quality of National Accounts is not the same in all countries.

Box V3.1.2: Luxembourg Recommendations on Global Implementation and Outreach for the System of National Accounts

Following the request of the [United Nations Statistical Commission](#), Eurostat and the UN Statistics Division organised a high level conference on “International Outreach and Coordination in National Accounts for Sustainable Growth and Development” in 2008. The conference adopted the “[Luxembourg Recommendations on Global Implementation and Outreach for the System of National Accounts](#)”. The Luxembourg Recommendations outline the principles and recommendations that will guide the global implementation and outreach programme for the SNA in developing countries in the coming years.

The Luxembourg Recommendations are grouped in according to the three distinct principles of “Managing for Development Results”:

(a) Strategic planning principle – Mainstreaming strategic planning for the development of national accounts and related basic statistics at the national, regional and international levels

Best practices are readily available on how to develop strategic planning frameworks for the development of statistics. One example is PARIS 21’s [guidelines on National Strategies for the Development of Statistics \(NSDSs\)](#) (see section C.6.1.). The [United Nations Development Assistance Frameworks \(UNDAFs\)](#), the [General Data Dissemination System \(GDDS\)](#) as well as the World Bank’s [Country Assistance Strategies \(CAS\)](#) and World Bank/IMF [Poverty Reduction Strategy Papers \(PRSPs\)](#) provide other examples of strategic planning frameworks.

Recommendation 1 – Strategic planning frameworks

A strategic planning framework should be formulated for national statistical capacity in national accounts and other economic statistics. This should be integrated with balance of payments, government finance statistics and environmental accounting and statistics, etc. The framework should be a component of the National Strategy for the Development of Statistics (NSDS), be regularly updated and be consistent with the GDDS and other reference frameworks of the country. National, regional and international strategies on economic statistics should be synchronized, and actions determined by information from strategic planning frameworks and other mechanisms. Further alignments have to be pursued according to various frameworks (such as the [RRSF](#) in Africa and [ECLAC’s Strategic Plan 2005-2015](#)).

(b) Coordination, monitoring and reporting principle – Coordinating the programming, monitoring of and reporting on the strengthening of the statistical infrastructure for economic statistics

Recommendation 2 - Coordination, monitoring and reporting

Regional Commissions, in collaboration with other regional partners, play a central role in the coordination, monitoring, reporting and maintenance of existing mechanisms. The aim is to enhance the efficiency of technical cooperation programmes and alignment with national commitments for development of official statistics. National donor groups on statistics should play a role in improving coordination, monitoring and reporting in statistical capacity building. NSIs or other agreed coordinators should coordinate the national statistical system to enhance effectiveness. South-South cooperation should be further developed.

Recommendation 3 - Global governance

A global governance structure should be created to develop coordination, monitoring and reporting procedures, avoid duplication, to assess performance of the implementation programme and the progress of countries/regions against set benchmarks. This structure could take the structure of the latest [International Comparison Program \(ICP\)](#) round as a model. Modular structures should be agreed and classifications for international, regional and national statistical capacity programmes used (including quality assessments).

(c) Statistical system improvement principle - Improving the national, regional and international statistical system

Recommendation 4 - National statistical capacity building

National statistical capacity building in national accounts and related economic statistics should be achieved through a unified implementation programme. This includes development of statistical infrastructure, sustainable donor activities, technical assistance, training capacity and application of common software tools (e.g. [SDMX](#), [ERETES](#)). Common training modules in national accounts and related statistics, including distance learning, should be developed. Promotion and adaptation of national accounts data for policy purposes underpin strategic planning frameworks.

Recommendation 5 – SNA Knowledge Platform: statistics, information technology and management

A SNA knowledge platform should be established on statistical standards, training programmes and best practices, information technology tools and management for national statistical systems. An international network for economic statistics should be established through recognized “Centres of Competence”.

The implementation of the Luxembourg Recommendations should result in improved national statistical capacity for developing countries, including enhanced quality of statistics, better conceptual compliance, harmonization and improved comparability of statistics, strengthened coordination, monitoring and reporting between donors and recipient countries and more intensive and appropriate use of national accounts in policy making.

The Luxembourg Recommendations have led to a Global Implementation and Outreach Programme for SNA, drafted by the ISWGNA in collaboration with regional and national partners and adopted by the UN Statistical Commission in 2009. Furthermore, the Regional Commissions in collaboration with regional and national partners have formulated regional implementation and outreach programs for SNA.

V3.1.2. Implementation of the System of National Accounts

V3.1.2.1. MILESTONES FOR 1993 SNA IMPLEMENTATION

Both the SNA framework and the ESA framework have two main sets of accounts:

- The institutional sector accounts, see section V3.1.3.2
- The Supply and Use Tables with goods and services accounts, see section V3.1.3.3.

Upon request from the UN Statistical Commission, six milestones for 1993 SNA implementation were defined by the [Inter-Secretariat Working Group on National Accounts \(ISWGNA\)](#).

According to these recommendations, the milestones should be:

Milestone 1: Gross domestic product (GDP) at current and constant prices by industries and also final expenditure accounts.

Under Phase 1, the complementary data system giving “*Supply and Use Tables*” in current and constant prices is recommended. This establishes consistency between the output approach, the expenditure approach and the income approach.

In many developing countries, the next 1993 SNA milestones are often developed later or have not been developed at all:

Milestone 2: *The rest of the world account* with external trade figures for imports and exports of goods and services fully consistent with the IMF’s BoP system (BPM5).

Milestone 3: Production accounts and generation of income accounts for the institutional sectors. A full set of sector accounts for general government. (The production and generation of income accounts cross-classified both by institutional sectors and by industries should provide direct links between the *Institutional sector accounts* and the *Supply and Use Tables*. It should also ensure consistency between these two parts of the national accounting system.)

Milestone 4: *Institutional sector accounts* for the household sector and non-financial corporations.

Milestones 5 and 6: *Financial accounts and capital accounts for all institutional sectors.*

The ISWGNA listed the following annual tables and accounts as a minimum requirement for implementation of the 1993 SNA:

- Value added and gross domestic product (GDP) at current and constant prices by activity (industry);

- Expenditure of GDP at current and constant prices;
- Components of value added by activity (industry);
- Sequence of the institutional sector accounts for the total economy, (until net lending);
- Rest of the world account (until net lending).

The ISWGNA also recommended:

- Annual Supply and Use Tables
- Quarterly value added and GDP at current and constant prices by activity (industry)

A draft plan of milestones for implementation of the 2008 SNA was presented at the 42nd session of UN Statistical Commission in 2011. This follows the same sequence as the milestones for the implementation of SNA 1993.

V3.1.2.2. IMPLEMENTATION STRATEGIES FOR THE 2008 SNA

In most regions, advisory groups on national accounts and economic statistics have been set up. They prepare [regional implementation programmes for the 2008 SNA and the supporting statistics](#). These regional programmes are aligned with the [global implementation programme for the 2008 SNA](#). They cover three stages of the implementation of the 2008 SNA through a multi-year programme:

Stage I: Review of strategic framework and detailing of national and regional implementation programmes;

Stage II: Adaptation of classification frameworks, business registers and frames, surveys, administrative data sources and information technology infrastructure; and

Stage III: Application of adapted frameworks and source data, backcasting and change-over to 2008 SNA.

There is a consensus that these programmes should include:

- an assessment of the countries’ current capacity to produce supporting statistics for national accounts compilation;
- a roadmap to enhance the scope and quality of basic economic statistics and national accounts;
- a minimum common data set of annual and high frequency statistics with metadata descriptions.

The ISWGNA prepared the following table on 2008 SNA implementation milestones to the [42nd session of the United Nations Statistical Commission \(UNSC\)](#) in February 2011:

Implementation milestones	Complementary data systems	SNA-related data and development
Pre-SNA phases	Basic data on production, turnover, consumption, exports and imports. Consumer and producer price indices. Balance of payments goods and service account Monetary survey statistics	
Milestone 1: Basic indicators of gross domestic product (GDP) Final expenditures on GDP current and constant prices GDP by industry at current and constant prices	Supply and use table worksheets Balance of payments: current, capital and financial accounts Government finance statistics (GFS) transaction accounts	
Milestone 2: Gross national income and other primary indicators • for rest of the world External account of primary incomes and current transfers Capital and financial accounts	Capital stock statistics International investment position GFS transactions and stocks in assets and liabilities Monetary and financial statistics	Quarterly national accounts Regional accounts Satellite accounts for environment and other satellite accounts Input-output analysis
Milestone 3: Institutional sector accounts: <i>First step:</i> • For all institutional sectors Production account • For general government Generation of income Allocation of primary income Secondary distribution income Use of disposable income Capital and financial accounts	Same as for milestone 2	Same as for milestone 2
Milestone 4: Institutional sector accounts: <i>Intermediate step 1:</i> • For all institutional sectors Generation of income Allocation of primary income Secondary distribution of income Use of disposable income Capital accounts	Same as for milestone 2	Same as for milestone 2
Milestone 5: Institutional sector accounts: <i>Intermediate step 2:</i> • For all institutional sectors Financial account	Same as for milestone 2	Same as for milestone 2

The UNSC expressed a need for flexibility in the time horizon for the implementation of the 2008 SNA by Member States. It should take into account the needs of countries at different stages of development.

International and regional organisations facilitate the implementation of the 2008 SNA, especially through the regional implementation strategies. These institutions and other donors are urged to devote greater resources for this purpose. This includes the appointment of experts/advisors on national accounts. It is also important for countries to establish their national implementation programmes for the

2008 SNA and to support statistics in line with the regional and global implementation programmes;

The African Development Bank (AfDB), the African Union (AU) and the UN Economic Commission for Africa (UNECA) have established an African Group on National Accounts (AGNA) to foster the implementation of the 2008 SNA in Africa. The AGNA has prepared a '[Draft African Strategy for the Implementation of the 2008 SNA](#)'. The implementation of 2008 SNA is also followed up by [training workshops, seminars and regional meetings](#). Similar approaches have been pursued in the other [major regions around the world](#).

V3.1.3. National Accounts concepts and definitions

V3.1.3.1. GROSS DOMESTIC PRODUCT (GDP) AND GROSS NATIONAL INCOME (GNI)

V3.1.3.1.1 Gross domestic product (GDP)

Gross domestic product (GDP) is the most commonly used economic indicator in the National Accounts.

- GDP can be compiled both by the production, income or expenditure approach.
- GDP is the sum of gross value added by all resident producers in the economy (institutional sectors or industries).
- GDP is calculated without making deductions for depreciation of produced assets or for depletion and degradation of natural resources.

Gross value added for a sector or industry is a measure of the contribution to GDP made by the individual producer, sector or industry.

Simplified: $GDP = \text{SUM Output} - \text{SUM Intermediate consumption} = \text{Sum Value added}$

GDP by **the production approach**

- Output at basic value is defined equal to output at producers' value minus taxes on products plus subsidies on products.
- Value added for all sectors or industries is calculated as output at basic value minus intermediate consumption at purchasers' value.
- GDP is calculated as the sum of value added for all sectors or industries plus taxes on products minus subsidies on products.

GDP by **the expenditure approach**

- GDP is calculated as the sum of Final consumption (Household Government, NPISH) + Gross fixed capital formation + Change in inventories + Exports - Imports, all valued at purchasers' prices.

GDP by **the income approach**

- GDP is equal to the sum of incomes (compensation of employees, gross operating surplus and gross mixed income of firms) increased by taxes net of subsidies on production.

GDP in current prices per capita is used as a broad measure of living standards, although there are a number of international statistical initiatives to provide alternative and more inclusive measures. The European Commission released a Communication in 2009, [GDP and beyond - Measuring](#)

[progress in a changing world](#), which aims to address the need for complementary indicators (alongside GDP) covering social and environmental progress.

GDP is also calculated in volume terms (based on previous year's prices or on prices of a base year). GDP in volume terms is intended to allow comparison of economic growth and development over time, since the impact of price developments (inflation) has been removed.

Starting with GDP at current prices, some countries deflates (i.e. divides) GDP at current prices with a "price indicator" (the GDP deflator) to obtain the GDP in real terms. Other countries deflate the National Accounts at a very detailed level (see section V3.1.3.4.)

Annual percentage growth rate of GDP in volume terms is an important indicator. The economic growth in many developing countries is very dependent on the agriculture sector. This is especially the case for small countries. The mining industries and the information and communication industries are also fast-growing industries in many African countries.

V3.1.3.1.2. Gross national income (GNI)

The difference between the numerical values of GDP and GNI is that GDP refers to production (output) and GNI refers to primary income. Primary incomes are income directly linked to production or ownerships of assets that may be needed for purposes of production:

The total primary income receivable to residents from non-residents
minus

The total primary income payable by residents to non-residents
=
Net primary income from abroad

Thus:

Gross domestic product (GDP)
minus
Net primary income from abroad
=
Gross national income (GNI)

V3.1.3.2. THE ACCOUNTS FOR THE INSTITUTIONAL SECTORS AND REST OF THE WORLD

An institutional unit is an economic entity that is capable in its own right, of owning assets, incurring liabilities and engaging in economic activities and in transactions with other entities.

The institutional sectors of SNA are groups of similar kinds of institutional units.

The institutional sector accounts describe for each sector the stages of the economic process and how income is generated, distributed, redistributed and used for consumption or acquisition of assets.

The main institutional sectors are:

- Non-financial corporations,
- Financial corporations
- General government
- Households,
- Non Profit Institution Serving Households (NPISH's)
- Rest of the world account

A complete system of institutional sector accounts will have a more detailed grouping of the sectors as split between different types of non-financial and financial corporations.

An overview of the sequence of accounts for institutional sectors:

- *The production accounts*
- *The distribution and use of income accounts*
- *The accumulation accounts*
- *Balance sheets*

V3.1.3.3. NATIONAL ACCOUNTS WITH SUPPLY AND USE TABLES (SUT)

The SUT focus on the product balances: where products come from and where they are used. Products are both goods and services.

Supply Table:	Domestic production + Imports
	=
Use Table:	Intermediate consumption + Final consumption + Gross fixed capital formation + Change in inventories + Exports

For some countries, Supply and Use Tables (SUT) are fully integrated in the National Accounts system and serve both statistical and analytical purposes (ref. SNA 93 chapter XV).

According to the recommendations given by ISWGNA, the first milestones for a SUT project under 1993 SNA implementation would be:

- Balanced Supply Tables and Use Tables compiled both according to the production approach and to the expenditure approach.

For developing countries, the balancing of the Supply and Use Tables is often of particular importance for compiling National Accounts. The compiler can then use judgement to reach a balance by adjusting the components as necessary.

Several developing countries (ACP countries) are using SUT as an integral part of the compilation of final annual National Accounts at current prices. They are also used as the framework for balancing National Accounts and compiling National Accounts aggregates. Some countries are also compiling SUT in previous year's prices. Others finish SUT after the final National Accounts aggregates are published.

SUT compilation incorporates the components of the three approaches for measuring Gross Domestic Product (GDP): The production approach, the expenditure approach and the income approach. This enables a single estimate of GDP to be determined, both in current prices and in volume terms.

SUT represent an integral part of and check on the economic statistics and the National Accounts estimates produced for the economy. They represent an important tool for constant price estimates (the double deflation technique), giving balanced SUT in both current year's and previous year's prices.

SUT should also be converted to Input-Output tables (IOT), industry by industry or product by product tables. SUT and IOT represent statistical databases for econometric models and economic planning.

Developed or developing countries following the old British national accounts tradition were compiling GDP by the Income and Expenditure method and had no tradition for compiling SUT. GDP was often calculated as an average of the GDP compiled in these two ways. Good administrative data are needed for calculating GDP by the Income method.

Satellite accounts, such as the "*Tourism satellite accounts*" and the "*Environmental accounts*" can also be developed with a direct link to the SUT.

V3.1.3.4. NATIONAL ACCOUNTS WITH SUPPLY AND USE TABLES (SUT) IN CONSTANT PRICES

When SUT are compiled for two years, constant price compilation can take place by converting the current year SUT into the previous year's prices. Alternatively, the SUT can be compiled in current and constant prices at the same time.

Advantages of **calculating values at constant prices in a SUT framework**

- The use of a SUT calculation scheme supports the calculation of values at constant prices, volume indices and price indices for transactions of goods and services in the National Accounts.
- SUT at current prices provide an excellent compilation framework for constant price estimates. SUT give a readily available overview of transaction data, price indicators and volume indicators.
- When SUT at constant prices are established in an accounting framework, they give volume indices and deflators of several variables and at different levels of aggregation, interrelated in a systematic way.

V3.1.3.5. QUARTERLY NATIONAL ACCOUNTS

Quarterly National Accounts could constitute the central instrument for short-term economic analysis. There is strictly no difference between the quarterly accounts and the annual accounts as regards the basic principles. The aim of the quarterly accounts is to provide at the earliest possible moment reliable figures for the changes in the major macroeconomic aggregates. The quarterly accounts are simplified compared with the annual accounts, but requires timely short term indicators.

V3.1.4. National Accounts statistical classifications

V3.1.4.1. CLASSIFICATION FOR INDUSTRIES AND PRODUCTS

The [International Standard Industrial Classification \(ISIC\) Revision 3](#) (or [Revision 3.1](#)) is widely used for classifying activities (industries) in business registers and in Economic statistics for enterprises. In the NSI, statisticians may work with the statistical data at a very detailed level. The National Accounts will be compiled at a more aggregated level, but might specify in detail the most important industries in the country. Because of confidentiality rules, only aggregated data may be available to the public.

Many countries are now in the process of revising the classification used in registers and the economic statistics to introduce the new [International Standard Industrial Classification \(ISIC\) Revision 4](#).

The National Accounts have to be revised accordingly. The product classification used in Supply and Use Tables must also be changed from the [Central Product Classification \(CPC\) Version 1.0 from 1998](#) to the new [CPC Version 2.0](#), revised in accordance with the new ISIC Revision 4.

For the EU member countries Eurostat has adopted NACE as the statistical classification of economic activities and CPA as the statistical classification for products. From 2009 on, the revised classification [NACE Revision 2](#) has replaced [NACE Revision 1](#). The new [CPA 2008](#) is revised in accordance with NACE Rev. 2. The EU member countries must change to NACE Rev. 2 and CPA 2008 for reporting of National Accounts in 2011.

V3.1.4.2. CLASSIFICATION FOR FINAL DOMESTIC EXPENDITURE

The following classifications for the **expenditure approach** should be integrated in the National Accounts compilation:

- [COICOP](#) classification for household consumption expenditure

- [COFOG](#) classification for government final consumption expenditure
- [COPNI](#) classification for final consumption expenditure of the non-profit institutions serving households (NPISHs)
- Gross fixed capital formation by industry

V3.1.5. Sources of data for the National Accounts compilation

V3.1.5.1. ORGANISATION OF THE STATISTICS

The National Statistical Institute (NSI) is responsible for the National Accounts in the majority of developed and developing countries, but we also find countries where the National Accounts work is the responsibility of the National Central Bank.

A business register in the NSI should in principle cover all production units: However, in many developing countries the register has insufficient coverage and is not regularly updated.

For the National Accounts (NA) compilation, the NA divisions are relying on a large number of statistics compiled by other divisions of the NSI or by other government departments. A mixture of statistical surveys and administrative data can be used as data source for the National Accounts compilation. Line ministries such as for agriculture, health and education will often have statistical services. A formal service-level agreement or memorandum of understanding between the NSI and other government departments compiling statistics is sometimes necessary to align the interests of the services.

The compilation and balancing of the National Accounts implies in many developing countries that the National Accounts staff are both controlling and correcting different types of statistics used as input for the National Accounts compilation.

V3.1.5.2. DATA SOURCES FOR NATIONAL ACCOUNTS

V3.1.5.2.1. Data sources for annual National Accounts in current prices

In a developing country, all economic statistics and also relevant data sources from different government ministries should be used for the national accounts compilation.

Important data sources are:

- Agriculture statistics and agriculture census (see chapter V4.3)
- Livestock censuses
- Fisheries statistics (see section V4.3.2.8)

- Banking statistics and statistics for other financial institutions
- Annual Economic Survey for large enterprises or for a sample of enterprises (see chapter V3.5)
- Energy statistics
- Government Audited Accounts and Budget Documents (see chapter V3.2)
- Labour force survey (see chapter V2.6)
- External trade statistics with value and quantity data for imports and exports (see chapter V3.4)
- Integrated Household Survey
- Consumer price indices (see chapter V3.3)
- Population Census, Housing Census (see chapter V2.3)

Banking statistics and statistics for other financial institutions

Statistics for financial institutions are from the National Central Bank or from the Financial Market Supervising and Regulatory Agencies. Special rules are given for compiling and distributing the production from banks, based on interests received and paid, called “financial intermediates services from banks” (FISIM). FISIM allocation in the National Accounts is based on the monetary and banking statistics and information from the Balance of Payments (BOP) and the International Investment Position (IIP).

General government budgets and accounts

In the National Accounts, the value of the output of services from general government is calculated as the sum of the production costs: intermediate consumption, consumption of fixed capital and compensation of employees. On the expenditure side, gross output is equal to the sum of the government fees (sales of goods and services) and government final consumption expenditure (the residual). The government final consumption expenditure should be classified by the COFOG groups. Some countries are not able to compile figures for consumption of fixed capital for the government, and that will give an underestimation of value added for general government

Integrated Household Surveys or Household Budget Surveys

When they are available, data from Integrated Household Surveys or Household Budget Surveys can be used directly or indirectly as a data source for estimating Household Final Consumption Expenditure. Even with annual Household Budget Surveys, small samples and a high degree of non-response might make this important data source unreliable. For estimating the Household consumption figures, the results from the Household Budget Surveys have to be evaluated and compared or balanced with other data sources used for supply of goods and services.

Imports and exports of goods and services

Detailed data for imports and exports of goods and services are of great importance for the National Accounts and SUT compilation in developing countries. Eurostat has developed the EUROTRACE software package to manage data for external trade statistics (see chapter V3.4).

The balance of payments statistics should be the mirror of the Rest of the world account in the National Accounts. The current account of the balance of payments statistics measures all current transactions between a country and the rest of the world, including transactions in goods and services (the balance of trade); factor payments: income from capital and remittances by workers abroad; as well as international transfers.

The definition given in the ‘Balance of Payments and International Investment Position Manual, sixth edition (2008) (BPM6) for trade in goods’ is consistent with the 2008 SNA definitions. Good routines for data sharing (including the legal framework) are required between the NSI and the Central Bank. In some countries the Balance of Payments is compiled within the NSI which should ensure full harmonisation between the National Accounts and the Balance of Payments figures.

V3.1.5.2.2. Data sources for quarterly national accounts

For a developing country with scarce resources, production of regular and timely monthly or quarterly statistics can be very difficult or almost impossible. Main statistics which would be needed for timely quarterly national accounts are:

- Monthly production in agriculture, fishing, etc.
- Monthly or quarterly index of industrial production, etc.
- Monthly import and export statistics
- Monthly producer price indices and consumer price indices

V3.1.5.2.3. Price indices or volume data for compiling national accounts in constant prices

Price or volume indices are needed for compiling supply of products and use of products in constant prices. The price indices can be based on Producer Price indices and Consumer price indices. Unit value indices can be calculated based on volume indicators. Input price indices can be used for government services where no relevant price or volume information exists.

Producer Price indices (PPI) are mainly based on questionnaires from surveys where the prices are defined as sales price at the factory gate to the domestic market.

Consumer price indices (CPI) are acceptable price indices for service industries, supplying services to the households.

Unit value indices: When the product specification is so detailed that the products can be regarded as homogeneous products, unit value indices can be used. They are acceptable for deflating agricultural, forestry and fishing products and also mining products.

Input price indices: Where no available price indices or volume indicators exist for business services, input price indices can also be used. The input price indices for the different industries should be compiled by weighting price indices for intermediate consumption and the wage indices for compensation of employees for the different industries.

Price indices for imports and exports are important for calculating SUT in constant prices,

For imports and exports of goods, special exports and imports price indices might be collected. Unit value price indices for ordinary homogenous products can also be based on customs declarations for imports and exports.

V3.1.6. Analysing data quality and identifying problems

V3.1.6.1. SPECIFIC QUALITY ISSUES FOR NATIONAL ACCOUNTS

The quality of National Accounts data depends on the methodology used and the data coverage, how quickly statistics are published and their compliance with international recommendations.

Delays, statistical errors and incomplete statistical data may require time consuming estimation of the National Accounts figures. Several versions of preliminary and corrected data from statistical surveys will also require corrections of the input data for National Accounts and new balancing of the National Accounts figures.

Comparability between National Accounts in different developing countries is a huge problem.

Some countries are still compiling National Accounts according to 1968 SNA or have only partly introduced 1993 SNA (see Box V3.1.1). Inclusion or exclusion of non-observed economy is also a problem for the comparability between National Accounts in different countries.

To evaluate the National Accounts, IMF is conducting user assessments in both developed and developing countries to prepare the IMF's [Reports on Observance of Standards and Codes](#) (ROSCs). The IMF's reports are focusing on topics as prerequisites of quality, methodological soundness and accuracy and reliability.

V3.1.6.2. THE "NON-OBSERVED" ECONOMY

V3.1.6.2.1. Activities missing from statistical data collection

The economic activities missing from statistical data collections and from administrative sources have become known as the *"non-observed economy" (NOE)*. *NOE* refers to productive activities that may not be captured in the basic data sources used for compiling national accounts. Elements not observed will include estimates for informal enterprises not covered in statistical enquiries and corrections to some measures of informal enterprises that are captured in statistical enquiries.

The following activities should be recorded within the production boundary in the national accounts:

- underground activities,
- informal activities, including production of households for their own final use,
- illegal activities should be included in GDP but this is difficult in practice. Different way of measuring illegal economy also reduces the comparability between countries.
- other activities omitted due to deficiencies in the basic data collection program.

Production of households for their own final use is defined as those productive activities that result in goods or services consumed or capitalized by the households that produced them.

The following types of production by households are included within the production boundary whether intended for own final consumption or not:

- Production of goods for own final consumption, e.g. of agricultural products and their subsequent storage, gathering of berries or other uncultivated crops, forestry and the collection of firewood, hunting and fishing.
- According to 2008 SNA also other kinds of processing such as dressmaking and production of pottery and furniture should be included within the production boundary for countries where this is important.
- Own-account production of housing services by owner-occupiers;
- Own-account construction, including that by households;
- Production of services by paid domestic staff;

Domestic and personal services provided by members of a household for their own consumption are not included within the production boundary.

This means that activities like cooking, housecleaning, and looking after children and elderly people are excluded from GDP. These services are only included if they are carried out by people paid for doing so.

V3.1.6.2.2. The informal sector and the non-observed economy

The informal sector definition was adopted by the Fifteenth International Conference of Labour Statisticians in January 1993 and was linked to the conceptual framework of the SNA.

The informal sector was considered a sub-sector of the SNA institutional sector 'households', but the expression "informal sector" used in the context of the ILO work is used with a different meaning from the SNA grouping of institutional units. In the SNA, sectors are made up of complete institutional units. The ILO work focuses only on production activities and does not include the consumption and accumulation activities of the unit. Households having no productive activity are simply not included in the informal sector.

The non-observed economy (NOE) overlaps with, but is not the same as the ILO concept of *the informal sector*. The *observed and non-observed informal sector* involves in many least-developed and developing countries an important labour force, which contributes to economic production. The main aim of compiling statistics should be to cover as far as possible the productive activities belonging to the SNA. An exhaustive coverage of the National Accounts is an important quality aspect.

The informal sector may be broadly characterized as consisting of units engaged in the production of goods or services with the primary objective of generating employment and incomes for the persons concerned. These units typically operate at a low level of organization, with little or no division between labour and capital as factors of production and on a small scale. Labour relations - where they exist - are based mostly on casual employment, kinship or personal and social relations rather than contractual arrangements with formal guarantees.

Production units of *the informal sector* have the characteristic features of household enterprises. The fixed and other assets used do not belong to the production units as such but to their owners. The units as such cannot engage in transactions or enter into contracts with other units, nor incur liabilities, on their own behalf. The owners have to raise the necessary finance at their own risk and are personally liable, without limit, for any debts or obligations incurred in the production process. Expenditure for production is often indistinguishable from household expenditure. Similarly, capital goods such as buildings or vehicles may be used indistinguishably for business and household purposes.

A restriction is that at least some of the production must be sold or bartered. Some of the household enterprises that the SNA treats as producing "for own final use" are excluded from the *informal sector if they* produce exclusively for own final use. The activity of dwelling services produced purely for owner-occupation is excluded from the Informal sector.

The informal economy is considered as comprising informal employment (without secure contracts, worker benefits, or social protection):

- Informal employment in informal enterprises (small unregistered or unincorporated enterprises), including: employers, employees, own-account operators, and unpaid family workers in informal enterprises;
- Informal employment outside informal enterprises (for formal enterprises, for households, or with no fixed employer), including: domestic workers, casual or day labourers, temporary or part-time workers industrial outworkers (including home-workers), and unregistered or undeclared workers.

A key reference on the measurement and estimation of the non-observed economy is the OECD's '[Measuring the Non-Observed Economy – A Handbook](#)' from 2002, which focuses on the non-observed economy in a national accounts framework. The UNECE has documented national practices regard the national accounts treatment of the non-observed economy, e.g. in the report '[Non-observed Economy in National Accounts – Survey of Country Practices \(2008\)](#)'. Eurostat's '[Essential SNA: building the basics](#)' is a practical handbook aiming to support the Least Developed Countries, micro-states and others in implementing the 2008 SNA; it contains a chapter specifically on the measurement and estimation of the non-observed economy and the informal sector in developing countries in compliance with the 2008 SNA.

V3.1.7. Improving the National Accounts

V3.1.7.1. ORGANISATION OF THE WORK

Difference in economic growth observed for different developing countries may not always be real, but due to insufficient economic statistics which have required estimation and even guessing.

The NSI management and the National Accounts Divisions should have close contact, including regular meetings with other data producing agencies, such as the Central Bank and various ministries producing economic statistics for different sectors. It is important that other data providers understand and give priority to the data requirement for the National Accounts compilation.

Turnover of staff is a big problem in the NSI in many ACP countries. Turnover of qualified and trained staff is very serious for the National Accounts. The compilation of National Accounts requires special knowledge about the country's economy, special training in the National Accounts compilation methodology and also knowledge about the coverage and quality of the different economic statistics required for the National Accounts compilation.

Box V3.1.3: Eurostat's Handbook 'Essential SNA: Building the Basics'

As a follow-up to the Luxembourg Recommendations, Eurostat has developed the handbook '[Essential SNA: building the basics](#)', to support countries that need to develop the basics of a National Accounts system. The aim of this Handbook is to support the implementation of the 2008 SNA in Least Developed Countries, small island and fragile states that are in Milestone 0 of the implementation process, i.e. countries that are either in the early phases of implementing 1993 SNA, still follow the 1968 SNA or do not follow any SNA at all.

In addition to the 'Essential SNA' Handbook, an on-line helpdesk for methodological questions, a discussion forum, monthly papers about specific National Accounts topics and an e learning tool are available. The Handbook is translated to French, Spanish and Portuguese. A number of workshops will be facilitated in ACP and/or ALA.

Based on input from regional organisations and from high-level experts in National Accounts, the Handbook presents the following key issues for basic implementation of 2008 SNA:

Institutional issues: the necessity of creating a legal framework for National Accounts implementation and the strategy for developing the statistical system as base for National Accounts. This also includes dissemination issues;

Technical issues regarding the statistical infrastructure, such as the business register and the classifications which should be used;

Technical issues on statistical and administrative data sources required for National Accounts compilation, especially the use of data to compile National Accounts indicators;

Specific issues for National Accounts compilation, common to all target countries. These include, amongst others, the informal sector and the compilation of National Accounts in the conditions of high inflation.

For more information about 'Essential SNA', please consult the website:

http://ec.europa.eu/eurostat/statistics-explained/index.php/Building_the_System_of_National_Accounts

Box V3.1.4: ERETES national accounts software

ERETES is an information system used for the elaboration of National Accounts according to the SNA. It is used in around 30 countries all over the world. Main programs concerning implementation are carried out in Africa and Latin America, funded by amongst others France, UNDP, etc. Eurostat is engaged in the transfer of knowledge to the community of users. In particular, 4 regular regional workshops are organised. Furthermore, the ERETES users group is established to define mid-term orientations.

In line with the Luxembourg Recommendations suggesting using a common tool for the production of National Accounts, Eurostat continues its support to ERETES. The tasks during 2009-2012 include upgrading ERETES to 2008 SNA (including the balance sheet and the production of long time series), informal sector and quarterly National Accounts, as well as four regional or national workshops.

ERETES operates from a database with the basic economic data around which different technical tools (commodity flows, branch accounts, matrices from whom to whom, summary tables) or organizational (follow-up of work, note pad, online help) allows coordinated and consistent teamwork. It reconciliates the data and allows calculation of GDP according to the 3 traditional approaches (production, expenditures, income). ERETES is available in English, French and Spanish.

The monitoring is ensured by a Directors' Committee, consisting of the French national statistical institute INSEE and the copyright co-owners Eurostat and the French Ministry of Foreign Affairs.

Box V3.1.5: Implementation of ERETES national accounts software

The duration and type of assistance required for implementation of ERETES largely depend on the future users' level of experience of national accounts. Practical experience indicate that, to provide assistance, around seven one-week missions by an expert national accountant with specialist knowledge of the ERETES software are required. These missions coincide with the seven phases of compiling accounts using ERETES:

Phase 1 : Identification

- A country wants to adopt the ERETES software for compiling its national accounts. ERETES meets its requirements.
- The identification mission must analyse the local equipment, IT and statistical environment in the light of ERETES' requirements and propose the necessary update. An in-depth presentation of the software will help the users to participate in this analysis.
- Where appropriate, the base year will be chosen and a timetable drawn up for the first accounting year.
- An analysis of the IT situation will list any requirements in terms of equipment, software and basic computer training.
- An analysis of the statistical situation will involve a first overview over the available data and will identify any measures that may be necessary to supplement the incoming data.
- A detailed presentation focus mainly on the handling of the tool by future users. It provides a complete view of all the work to be done, so that the full scope of this work can be appreciated and an informed decision taken on whether to install ERETES.
- If the decision to install ERETES is confirmed, the installation timetable will be fixed. On average, two years are needed to compile a base year plus a current year. At the end of these two years, the team will have fully mastered working with ERETES.
- This identification mission is scheduled to last ten days in the country concerned.

Phase 2 : Installation

- The equipment and the necessary software are available, the team possesses the necessary IT skills. The work classifications have been drawn up and the main sources of data have been identified.
- The objectives of this mission are :
 - to install the software in all the planned workstations,
 - to load the local work classifications
 - to initialise the first accounting year
- The database management system and the ERETES software will be installed and customised on all the envisaged workstations.
- The local IT correspondent is appointed; he will participate in the installation of the software, in order to be able to repeat the procedure on his own. Training in the IT aspects of ERETES will be provided to the entire team and to any interested IT technician.
- The local classifications prepared by the National Accountants will be verified and loaded in the database.
- The procedure for launching the first accounting year will be completed.
- The preparation of sources is a delicate task, which is the sole subject of the next mission. This mission will clarify the role of each attribute and the importance of the work on sources, so that the team can begin to assemble its sources.
- This mission will be undertaken jointly by an ERETES computer specialist to deal with all IT aspects and a national accountant specialised in ERETES

Phase 3 : Processing of sources

- The national accountants have collected all required sources to compile the accounts.
- Users are trained to prepare the files that allow them to load their sources into ERETES. At the end of this mission, they must be capable of undertaking this task on their own. Specific exercises from the test set permit users to become familiar with the problems encountered when processing sources; choice of attributes, organisation of data, changeover from business accounts to national accounts.
- The entire team will participate in the study of prepared sources, organisation and aggregation of data. They will identify gaps in the information system and possibilities for remedying these. Then, each of the sources will be reviewed in order to decide :
 - the correspondence tables which should be used with the national accounts' classifications
 - the pillars around which these basic data should be concatenated
 - the most sensitive cases in terms of the allocation of methodological attributes.
 - It is usually during this mission that the table of Production modes is finalised.
- During this mission, the users will have several opportunities to test the IT procedure for loading data in the database.

Phase 4 : Pre-reconciliation

- The available source data have been processed and loaded in the database. An initial expert assessment of the overall consistency of these data must be made by the national accountants.
- This mission outlines the target objectives for each group of data and indicates the methods used in each case: external trade, final consumption, intermediate consumption, employment, gross fixed capital formation, output, taxes, trade and transport margins, salaries, inventories.
- In-depth training: Specific exercises of the test set permit users to become familiar with the techniques used in pre-reconciliations, in particular how to construct pivot tables and use them to analyse data.
- Various types of main problems need to be resolved: confrontation of two sources; corrections of the valuation method or of the time of recording; verification of the apparent rates of tax or social contributions; employment balance by industry and method of production (for assessment of the informal economy – see see chapter V3.5).

Phase 5: Work on local posts

- The data loaded in the base have been pre-reconciled, and are now sufficiently consistent so that one can pass to the stage of decentralization.
- This mission outlines the iterative cycle "Decentralisation, work on local posts, repatriation, transversal work" and train users to work on the tables used in the decentralisation phase.
- Decentralisation will be carried out by one of the administrators of the base, under the supervision of the external national accounts expert.
- Presentation of the different work tables on local posts proposed: supply/use balances, industry accounts, "who to whom" matrices (balance distributive transactions and financial transactions). Exercises from the test set and practical exercises based on local data will help users to become familiar with the various tools available.
- Repatriation will be undertaken by one of the administrators of the base, under the supervision of the external national accounts expert.
- A brief presentation of the transversal work procedure.

Phase 6: Synthesis

- Several successive iterations of the cycle "Decentralisation, work on local posts, repatriation, transversal work" have been carried out. The main inconsistencies initially presented by their data have been eliminated. In particular, the global supply of Intermediate Consumption derived from supply/use balances have been reconciled with the global demand expressed by the industry accounts.
- This mission must permit users to finish compiling the accounts of their base year. First the Use matrix will be completed, followed by the principal synthesis tables: the Supply / Use table, the table of Integrated Economic Accounts.
- Synthesis of the Inter-Industry Trade Table: From the outset, only the margins of the table are in balance: the core of the Intermediate Consumption matrix needs to be supplemented.
- Finalisation of the synthesis tables.
- The Table of Integrated Economic Accounts may be used for publication straight away.
- A detailed timetable for compiling the accounts of the next accounting year is prepared.
- Phase 7: Work on current year
- The base year accounts have been finished, ready for publication. This base and its entire documentation have been archived. The team has collected the sources for year $n + 1$ and is starting to process them.
- Train users in the specific characteristics of work on a current year.
- Review each of the work phases to identify their specific characteristics in a current year:
 - loading of sources: how to load value, volume, or price indices
 - pre-reconciliation: how to pre-reconcile prices
 - decentralised phase: the specific price and volume work tables
 - synthesis: projection of intermediate consumption

Box V3.1.6: ECOTRIM software for temporal breakdown of time series

The **ECOTRIM** software for temporal breakdown of time series (short term statistics, quarterly national accounts) has been developed by Eurostat. It runs under Microsoft Windows. ECOTRIM supplies a set of mathematical and statistical techniques to carry out 'temporal disaggregation'. It can be run either in interactive mode, with the user directly involved in the analysis, or in batch mode.

The statistical methods used for compiling quarterly national accounts can be classified as direct procedures and indirect procedures; indirect procedures are based on temporal disaggregation of the annual accounts data, in accordance with mathematical and statistical methods which use reference indicators that permit extrapolation for the current year. These methods may also be used to produce 'flash estimates' by using the available information in the best possible way, including, in the framework of a statistical model, the short-term available information and the low frequency data in a coherent way.

Temporal disaggregation techniques are useful also in compiling short-term statistics. Monthly indicators of GDP can be derived from the available information respecting the coherence with quarterly data. Temporal disaggregation can also be used to compile a range of other short term statistics, such as short-term industrial statistics, employment statistics and money and banking statistics.

ECOTRIM currently offers the following techniques:

- Temporal disaggregation of univariate time series by using or not related series and fulfilling temporal aggregation constraints;
- Temporal disaggregation of multivariate time series with respect of both temporal and contemporaneous aggregation constraints;
- Flash estimates of current year observations by using or not available information on related series.

Eurostat runs a project for development and maintenance of ECOTRIM. The plans include updating the Visual Basic/C++ version and upgrade the interface to better match production and users' requirements, as well as making the system Windows 7 compatible and compile a 64-bit application. It is also planned to include more recent methods, such as univariate regression-based temporal disaggregation and reconciliation by two-step procedures.

The ECOTRIM tool is used in Europe and in a number of other countries, including e.g. Senegal and Cameroon. The ECOTRIM user manual is available in English and French. Eurostat may under certain conditions be able to organise trainings in the use of ECOTRIM.

For more information, please e-mail to estat-methdology@ec.europa.eu

Box V3.1.7: Technical advice and training in National Accounts: Institutional co-operation project in Malawi

Norway is supporting Malawi through an “Institutional Cooperation Project”, a twinning project between Statistics Norway and the [National Statistical Office of Malawi](#), the Ministry of Economic Planning and Development and the Ministry of Finance. One goal of this project is to give technical advice and training for a sustainable National Accounts system. Improved quality and coverage of the National Accounts system should give a much improved basis for economic and social policy planning in the Ministry of Finance and the Ministry of Economic Planning and Development.

The objective of the project is to give training to the National Accounts and Balance of Payment Branch in NSI (NA/BOP branch) to introduce a sustainable methodology for the compilation of the National Accounts according to international recommendations (see Box V3.1.1). The staff of the NA/BOP branch has theoretical and practical “hands-on training” by long- and short-term advisers from Statistics Norway. Some of the statisticians in the NA/BOP branch have also participated in IMF National Accounts training courses or on SADC courses.

Based on available economic statistics in Malawi, it was decided to start with Supply and Use Tables (SUT), in accordance with SNA93. Important data sources were Crop production statistics, Annual Economic Surveys for large enterprises, Government accounts, Integrated Household Surveys and a planned Agriculture Census. For external trade statistics, the [EUROTRACE application package](#) gives detailed information about imports and exports. The Balance of Payments (BoP) figures in the NA/BOP branch cover import and export of services.

The frame for the first benchmark SUT was considered carefully regarding the level of detail. The following assessments were important:

- Establishing an aggregated National Accounts Industry Classification relevant for Malawi, specifying around 100 industries based on ISIC 3.1;
- Establishing a National Accounts Product Classification based on CPC, specifying around 400 products. Important food products in the Malawian economy were specified, also with a split between products sold to the market and products for own use. Products as food aid have been given special product codes.

The main data sources for the constant price compilation are price indices for agriculture products, consumer price indices and unit value price indices for imports and exports, based on value and quantity data from the EUROTRACE software. The methodology introduced, with constant price compilation in previous year’s prices and chain price indices, was new to the Malawi government. However, it was accepted since it is the recommended methodology in SNA93.

Excel work sheets are used for data input and the final tabulations. The NA/SUT data are stored in a database. The NA/BOP branch uses software provided by Statistics Norway which interacts with the Excel work-sheets to perform balancing of the SUT and to calculate the complex formulas of the SUT in current and previous year’s prices and the Input-Output tables.

In March 2007, revised National Accounts figures for the years 2002-2004 and preliminary aggregated figures for the years 2005 and 2006 were released. Comparison between old and new estimates showed that the level of GDP in current prices was revised up by 38.0 per cent in 2004 and 37.4 and 37.7 per cent in the two preceding years.

The ‘[Malawi National Accounts Report 2002-2005](#)’ explains the concepts, sources and methods used. National Accounts figures for Malawi are also published by the [Reserve Bank of Malawi](#) in its “Financial and Economic Review” and by the Ministry of Development Planning and Cooperation in the “Annual Economic Report”.

A further development has been to integrate the main parts of the Institutional Sector Accounts in the National Accounts System. An Excel workbook with the sequence of institutional sector accounts from Production account to Capital account has been developed. The data sources are from the SUT, the Government accounts and from Balance of Payments for the Rest of the World. The Non-financial corporations and Household sectors are combined and used as a residual. The “National Accounts and Balance of Payments Technical Committee” are compiling preliminary annual National Accounts estimates after conducting a small Business Interview sample twice a year.

A main revision of the National Accounts for Malawi is planned for 2011. The classification system will be based on ISIC 4 and CPC and some main aspects from SNA2008 will be introduced. Important new data sources are: A National Census of Agriculture and Livestock (NACAL) for 2007, the 2008 Population and Housing Census, revised data from the Annual Economic survey and an integrated Household Survey for the year 2010 (IHS-3).

A team of economic and environmental experts was in 2010 engaged by the Ministry of Development Planning and Cooperation, financed by the UNDP, to assess the contribution of natural resources to the Malawi economy. A conclusion was “the GDP figures understate the true contribution of forestry by not capturing the extensive use of wood for fuel”. The team had also other examples; The NSO defended the NA figures, answering “in any country in the world, some activities in the economy are not fully factored into the official GDP measurement”.

To find out more...

References and websites

- [System of National Accounts 2008 - 2008 SNA website](#)
- [Intersecretariat Working Group on National Accounts \(ISWGNA\) website](#)
- [Integrated Economic Statistics website](#)

About National Accounts in developing countries

- Eurostat: 'Essential SNA: building the basics' Handbook
- [Luxembourg Recommendations on Global Implementation and Outreach for the System of National Accounts \(2008\)](#)
- Intersecretariat Working Group on National Accounts (ISWGNA): 'Implementation Programme for the System of National Accounts 2008 and Supporting Statistics', 'Guidelines for monitoring the 2008 SNA implementation' and the [SNA Implementation website](#)
- African Group on National Accounts (AGNA): 'Draft African Strategy for the Implementation of the 2008 SNA' (2010)
- United Nations Economic and Social Commission for Asia and the Pacific (ESCAP): 'Proposed regional programme for the improvement of economic statistics in Asia and the Pacific' (2010)
- United Nations Economic Commission for Africa: [Reforming national accounts systems in Africa \(2009\)](#); [Implementation guide for the 2008 System of National Accounts \(2008 SNA\) in Africa \(2010\)](#); [Handbook on Supply and Use Table: Compilation, application, and practices relevant to Africa \(2012\)](#)

System of National Accounts and European System of Accounts

- [System of National Accounts, 1993 \(1993 SNA\)](#)
- [System of National Accounts, 2008 \(2008 SNA\)](#)
- [European System of Accounts, 1995 \(ESA1995\)](#)
- [European System of Accounts, 2010 \(ESA2010\)](#)
- [Eurostat Manual of Supply, Use and Input-Output tables](#)

Methodology – Non-Observed Economy

- OECD: [Measuring the Non-Observed Economy – A Handbook \(2002\)](#)
- UNECE: [Non-observed Economy in National Accounts – Survey of Country Practices \(2003\)](#)
- UNECE: [Non-observed Economy in National Accounts – Survey of Country Practices \(2008\)](#)

Methodology – Balance of Payments

- [IMF Balance of Payments manual, 5th edition \(BPM5\) \(1993\)](#)
- [IMF Balance of Payments and International Investment Position Manual, 6th edition \(BPM6\) \(2009\)](#)

Software

- [ERETES](#) software package for National Accounts
- [ECOTRIM](#) software for temporal breakdown of time series (short term statistics, quarterly national accounts); e-mail to estat-methodology@ec.europa.eu
- [EUROTRACE](#) software package to manage data for imports and exports of goods

Data sources

- United Nations: [National Accounts Main Aggregated Database](#)
- World Bank: [Economic Policy and External Debt](#)
- OECD: [Data](#)
- World Bank: [World Development Indicators](#)
- Eurostat: [National Accounts statistics](#)
- [Statistical Commission for Africa \(STATCOM-Africa\)](#)

Classifications

- [UN Classifications registry](#)
- [International Standard Industrial Classification, Third Revision \(ISIC Rev. 3\) \(1990\)](#)
- [International Standard Industrial Classification, Fourth Revision \(ISIC Rev. 4\) \(2008\)](#)
- [Central Product Classification, Version 1 \(CPC\) \(1998\)](#)
- [Central Product Classification, Version 2 \(CPC2\) \(2008\)](#)

V3.2

Government finance and public sector statistics



V3.2. Government finance and public sector statistics

The chapter in brief

This chapter covers statistics on the finances of government and public sector, informing fiscal policy both at national and sub-national level. The methodology of the budget compilation at national or sub-national (regional, local) level varies from country to country. It may also be modified from year to year. Thus, data taken directly from the national budgets may not be directly usable for international comparison. In some instances, time series within the same country are also not comparable. Therefore, there are advantages in the use of statistical methodology over the use of budget data, as the statistical methodology provides a unified and transparent tool for macroeconomic analysis of fiscal processes.

The different principles of government budgeting and accounting are explained. The difference between government finance statistics and public financial management is also clarified. Practical advice is given on how to develop government finance statistics in developing countries. In particular, this advice relates to different types of public budgeting, emphasising comparability across countries and over time. The chapter also touches upon the problem of how to measure the level and volumes of government services. This is a crucial issue for evaluating the efficiency of public services.

- In recent years, policy interest in improving the efficiency and productivity of government services has been growing. For this purpose, there needs to be a value set for the output of government services.

In particular, the availability and quality of government finance and public sector statistics are vital for budget support, as they provide baselines and data for calculating key indicators for monitoring and evaluation of the impact of the budget support interventions.

V3.2.2. Concepts and definitions

V3.2.2.1. ACCOUNTING PRINCIPLES: CASH BASIS VERSUS ACCRUAL BASIS

There are two different accounting principles used in budgets and by budget units, cash basis accounting and accrual basis accounting. National budgets are usually compiled on cash basis; this is generally the case in developing countries.

Cash basis

The cash basis of accounting recognizes transactions and events only when cash is received or paid by the budget unit. For example, under the cash basis the payment of current income tax is recorded when the payment is actually done, usually some months after the end of the reference year. A budget based on cash basis only records monetary flows. Financial statements prepared under the cash basis provide information on the sources of cash raised during the period, the purposes for which cash was used and the cash balances at the reporting date.

The financial statements focus on measuring cash balances and the changes in them. Notes to these financial statements may provide additional information about liabilities and some non-cash assets. Under the cash basis, the payments of government debt are recorded when interest or down-payments are actually paid.

Under cash basis accounting, debt is only captured for debt service and “drawing” (i.e. raising cash by taking up debt, issuing government bonds, etc.). In other words, current transactions are captured, liabilities not. In order to assess a country’s ability to handle further borrowing, separate records are needed to keep trace of the nominal value of the country’s debt stock. Debt management and reporting is a critical issue in many developing countries, not only in the [Heavily Indebted Poor Countries \(HIPC\)](#).

V3.2.1. Policy applications: what this data is used for

There are a number of important reasons for the great interest in government finance and public sector statistics:

- Governments redistribute a large part of the national income through the budget, so it is important to know for which policy purposes/fields the money is spent.
- The level and the composition of the tax burden is a key area for policy making and analysis.
- Governments are usually good debtors; they are able to absorb liquid financial assets, crowding out private investors.
- In developing countries, the availability of reliable fiscal statistics is a central element for development planning.
- Public debt is a burden for coming generations. This is why public deficits and debt levels should be kept under strict control, so that a sustainable fiscal position is maintained in the long term. The liabilities of social security pensions are another (implicit) burden for future generations.
- The public sector is a large employer; its behaviour has a significant impact on employment and wages at national level.
- In many countries, government debt is mainly financed by foreign investors. Thus, the level of government deficit and debt may influence international financial markets.

The **International Public Sector Accounting Standard (IPSAS) for Cash Basis** details the financial reporting under the cash basis of accounting in the public sector.

Accrual basis

Under the accrual basis of accounting, transactions and events are recorded when amounts to be paid are built up. For example, the payment of current income tax is recorded within the reference year, when the income is earned. Interest payments on the government's debts are recorded when the payable amounts are built up. Accrual accounting also covers non-monetary transactions, such as distribution of goods or assets free of charge, the assumption or cancellation of debt.

Accrual accounting is often considered the best basis for analysing enterprises, measuring cost, income and net worth. However, cash based accounts are useful for example for purposes such as liquidity management. It is possible to adjust from cash based to accrual based financial statements or the other way.

Although the main guidelines for government finance apply accrual accounting (see section V3.2.2.2. below), even developed countries often use cash basis accounting in their national budgets. However, more and more countries move towards accrual accounting, based on international accounting standards and recommendations. In any case, a good cash based system must be in place first of all. Such a move should be a part of overall reform and not an end in itself, and each step should be useful in itself.

V3.2.2.2 GUIDELINES FOR GOVERNMENT FINANCE STATISTICS

Government has special power, motivations and functions in the economy; this is reflected in the statistical methodology of government finance. At the same time, government activities have a great influence on the economy; to follow this impact, the methodology of government finance is consistent and coherent with the rules of national accounting.

Two main internationally accepted government finance guidelines exist. One is the **Government Finance Statistics (GFS)**, prepared by the IMF. The second methodology is the **European System of Accounts (ESA)**, managed by Eurostat, and its supplementary detailed regulations for the accounting of the performance of the government sectors. ESA is based on the UN's **System of National Accounts (SNA)**. The presentation of the two systems is different, but the stocks and flows are defined and valued in the same way. The balancing items are either identical, or can easily be deducted from each other. The conceptual differences are of minor importance.

In addition, the International Public Sector Accounting Standards Board (IPSASB) publishes International Public Sector Accounting Standards (IPSAS), both for cash basis accounting and accrual accounting in the public sector. All IPSASs are contained in the **IFAC Handbook of International Public Sector Accounting Pronouncements**.

The IMF, the European Union and the IPSASB work to eliminate as many differences as possible. However, it is inevitable that some differences will remain because the purposes of the various reports are different.

Example of minor differences between GFS and ESA

The GFS does not record separately the value of financial services paid as part of the 'interest margin', i.e. the difference between the bank interest rate charged for credits and the interest rate paid on deposits. This item is called FISIM: Financial Intermediation Services Indirectly Measured.

V3.2.2.3. THE COVERAGE OF THE GOVERNMENT SECTOR AND OF THE PUBLIC SECTOR

In government finance statistics, economic criteria are used to define the government sector, not legal criteria. This means that the coverage of the government sector in government finance statistics does not necessarily coincide with the coverage of the official budget. Thus, the definition of the government sector for statistics is:

- The Government sector consists of entities/institutional units that implement public policy, through the provision of non-market services and/or through the redistribution of income and wealth (this redistribution is regarded as a form of provision of non-market services.)

Two criteria decide whether an institutional unit belongs to the government sector or not. The units in the government sector:

- should be non-market producers, and
- should be controlled by the government.

Production is called 'non-market' if the majority of the production costs are not covered by market sales, but financed from other sources. 'Control' is the ability to determine the general policy or program of an institutional unit.

Box V3.2.1: The government sector and the public sector

In statistics, the **government sector** usually differs from the set of units covered by the national and sub-national budgets.

Universities, the national broadcasting agency, or units engaged in public transport investments (road development) are good examples of borderline cases; these units are outside the budget, but are mainly financed directly from government sources and controlled by government units.

The **public sector** consists of all institutional units controlled by government entities: that is, the government sector plus those corporations in which the government owns the majority of equity. Public transport companies, public utilities etc. usually belong to the public sector. Currently, only a few countries compile statistics on the public sector.

Depending on administrative and legal arrangements, there may be more than one level of government within a country. In public finance statistics, a maximum of three levels of government is defined: central government, state/regional government and local government. Social security funds may be treated as a separate subsector.

In some countries, the budget only covers a general fund, without institutional coverage. In such a case, only taxes, social contributions and dividends (if applicable) are recorded on the revenues side. The expenditures are classified as transfers, grants within levels of government and interest payments. In this case, wages and salaries of government employees are not recorded separately but included in the total amount of transfers.

In order to compile government finance statistics, data are required both for the institutions included in the budget and for other units classified to the government sector. The unit types that should be included in the statistics on the government sector are:

General government

- State (budgetary core unit)
- On-budget entities: budgetary institutions, budgeted funds
- Off-budget entities: budgetary institutions, extra-budgetary funds
- Public corporations and non-profit units, controlled and mainly financed from government sources

Public non-financial and financial corporations, controlled by government

- Central bank (only for central government)
- Public financial corporations, controlled by central, state/regional or local government
- Non-financial corporations, controlled by central, state/regional or local government

For Social security funds, treated as a separate subsector:

- Social security funds
- Fund managers

V3.2.2.4. THE ANALYTIC FRAMEWORK

The complete public finance statistics comprise the balance sheet at the beginning and end of the year, as well as the accounts that record the changes of the balance sheets (flows) during the year. On the asset side, the value of financial and non-financial assets is presented. The liability side shows the value of government liabilities. Net worth is the difference between the value of assets and liabilities.

Example

The value of the stocks of government-owned buildings may change during the year due to:

- New buildings are constructed
- Existing buildings are sold or demolished
- The value of the buildings increases because of inflation
- The value of the buildings declines as a result of physical deterioration and of being obsolete.

Many countries are not yet able to compile the complete balance sheet, because it is a difficult process to value non-financial assets. In many developing countries, the problems may be even more basic: a first challenge and priority may be simply to have a comprehensive and up-to-date asset register available. A central issue in developing countries is to assure that the basics are in place and functioning.

Government debt

Government debt is the sum of all liabilities of the general government sector. It is valued at market value.

Usually, consolidated figures are reported: treasury bills and bonds held by local governments are consolidated and interest payments on them netted out. For analytical purposes, domestic debt and foreign/external debt should be distinguished. In statistics, foreign debt is defined as debt held by non-resident entities; *in practice*, debt is normally labelled according to the currency in which it is denominated. Debt should be classified also according to maturity: a high share of short term debt may cause difficulties in liquidity management.

In the case of negotiable debt, the difference between the nominal and market value may be significant.

Box V3.2.2: Capacity building and training in government debt statistics

The United Nations Conference on Trade and Development (UNCTAD) has established a [Debt Management and Financial Analysis System \(DMFAS\) programme](#), providing technical cooperation and advisory services in debt management. The programme helps governments to improve their capacity to manage debt and has worked directly with a large number of low and lower-middle income countries.

The DMFAS programme is a concrete example of how capacity is built at country level, in support of good governance, development and poverty reduction. It provides countries with the means to improve their management of public liabilities, and consequently public resources, through the strengthening of their institutional capacity in this area. The programme builds capacity not only through UNCTAD's DMFAS software, but also through increased human and institutional capacity to manage the operational, statistical and analytical aspects of debt management. The capacity-building is delivered through in-country and regional training, including debt validation, debt statistics and debt portfolio analysis. To formulate effective debt strategies, one must build a comprehensive debt database. On this basis, reliable reports and statistics can be produced and analysis carried out.

DMFAS encourages south-south cooperation and sharing best practices. It regularly uses proficient DMFAS users from developing countries to train new users in other developing countries.

Revenue and expenditure

Government finance statistics present government operations in the same way as they are presented in the budget.

Government revenue and expense are defined as:

- **Revenue** is all transactions that *increase* the net worth of the government sector
- **Expense** is all transactions that *decrease* the net worth of the government sector.

The main types of government revenue are: taxes, social security contributions, dividends from public companies, grants from abroad.

Taxes and social security contributions are defined as compulsory transfers to the government, without direct service in return. In fiscal analysis, tax revenue plus compulsory social security contribution as a per cent of GDP is called **fiscal burden**.

In ESA and GFS, the classification of taxes is different. The ESA has provisions for compilation of (i) taxes on production and imports; (ii) current taxes on income, wealth, etc.; (iii) capital taxes. The GFS classifies taxes according to the base on which the tax is levied. Six major groups are defined: (i) taxes on income, profits and capital gains; (ii) taxes on payroll and workforce; (iii) taxes on property; (iv) taxes on goods and services; (v) taxes on international transactions; (vi) other taxes.

The main types of government expense are: salaries and wages for government employees; purchase of goods and services for providing government services; social benefits paid to households; interest paid on government debt; subsidies to enterprises.

Social benefits are provided as social insurance or as social assistance. Whereas social insurance is a collective scheme that requires membership, social assistance is provided by government based on specified social needs. The social insurance system operated by the government is called social security. Employers or insurance companies may operate other forms of social insurance.

The contribution to and benefits from the social security system is divided between pensions and all other forms of insurance. Social security pensions are frequently funded on a pay-as-you-go basis; the contributions received in a period are used to fund the benefits paid in the same period. There is therefore no saving recorded, neither for the government nor for the individuals participating in the scheme. An important concern is that the benefits may exceed the contributions and that the situation will worsen when the population ages. There may be a great variety of other forms of pension schemes (see the [System of National Accounts 2008](#), Chapter 17, Part 2).

Balancing items

The balancing items are the difference between revenue and expense. Three core balancing items are used as measures for fiscal policy:

- **Net and gross operating balance** equals total revenue minus total expense. The gross operating balance excludes depreciation costs from the expense (the value of the depreciation of fixed assets is difficult to measure).
- **Net lending/borrowing** equals the operating balance minus the acquisition of non-financial assets. In other terms, net lending/borrowing also equals the difference between new financial assets and new debts.

- **Primary balance** equals net lending/borrowing minus interest paid on debts.

The ESA uses the category expenditure: expenditure includes all transactions that worsen net lending/borrowing. On other words, expenditure equals expense plus the acquisition of non-financial assets.

Revenue	Expense	Balancing item
Total revenue	Total expense	Operating balance
Total revenue	Total expense + acquisition of non-financial assets	Net lending / borrowing
Total revenue	Total expense + acquisition of non-financial assets - interest paid	Primary balance

Beside these core balances, a number of other balance concepts may be used for policy analysis. The most frequently used are:

- **Cash surplus/deficit:** the net cash inflow from operating activities, minus the net cash outflow from investments in non-financial assets;
- **Overall fiscal balance:** net lending/borrowing, adjusted by items that are for public policy purposes. For example, subsidies given in the form of loans would be recognised as an expense;
- **Adjusted overall fiscal balance:** overall fiscal balance, adjusted to exclude from the revenue any grants and other large and infrequent transactions that could distort the fiscal analysis.

A detailed classification of expenditure is crucial for fiscal analysis. Two classifications are used in combination: An economic classification and a functional classification.

The **economic classification** identifies the different types of expenses/expenditure for providing 'non-market products' (public services and goods) and for redistribution of income (taxes, social benefits, grants, subsidies).

The **functional classification** identifies the social or economic purpose of the expense/expenditure. The OECD has developed the **Classification of the Functions of Government (COFOG)** system. At the first level of COFOG, 10 divisions are distinguished:

- General public services;
- Defence;
- Public order and safety;
- Economic affairs;
- Environmental protection;
- Housing and community affairs;
- Health;
- Recreation, culture and religion;
- Education;
- Social protection.

Consolidation

Consolidation ignores (or nets out) certain flows and stocks between the units belonging to the same sector. As a general rule, the entries in the ESA are not consolidated. The GFS, on the other hand, prefers consolidation.

Consolidation usually involves the elimination of stocks and flows in debtor-creditor relationship. For example, that central government securities owned by local governments are not included in the consolidated government debt. Thus, intergovernmental interest payments are also excluded. Current and capital transfers paid between subsectors of government may also be netted out. For analytical purposes, consolidated figures for the government are more relevant: they present the relation of the government *as a whole* to the national economy. Consolidated figures for revenue and expense are significantly lower than unconsolidated figures.

Data for the *public sector* could be presented in two ways: public corporations as a separate sector, or consolidated with the general government.

V3.2.3. Sources of data and metadata

With some minor exceptions, government finance statistics rely on administrative sources. Important sources are the annual and quarterly reports of budget units and the data of the report on execution of the annual budget. In developing countries, this may already be a challenge.

Data on taxes and social contributions come from the tax authorities. In most countries the State Treasury manages all cash transactions of the budget units. This data source is appropriate mainly for short-term statistics. Often, a special unit manages the financing of the government debt, providing data on government bonds and treasury bills and the interest paid on them.

Government finance follows the accounting principle of 'substance over form'. Thus, certain transactions in the budget are:

- Netted (e.g. netting of VAT flows of government units) or grossed (e.g. of the net cash flow of two transactions in different directions).
- Imputed (e.g. social benefits provided by government employers to their employees in a nature, similar to social security benefits);
- Re-routed (e.g. social security contributions paid by government employers are presented as if they were paid as wages and employees then pay them into the social security system).

These statistical adjustments require extra data collection if the budget accounting is on a pure cash basis. Fiscal transparency and public sector accounting standards require that the accounting rules and accounting basis attached are disclosed.

Data availability

A comprehensive set of fiscal data for developing countries is collected by the IMF. The **Statement of Government Operations (SOGO)** and supplementary tables are published in the **IMF Government Finance Statistics Yearbook**. SOGO provides the main aggregates of transactions, like revenue and current expenses and net acquisition of non-financial assets. Statistical discrepancy is presented, between the value of net-lending-borrowing compiled from current and capital accounts on one hand and as the balance of financial accounts on the other. The share of this discrepancy to total expenses may indicate the reliability of the estimates.

Most developing countries do not report a complete balance sheet for SOGO; data on the stock of non-financial assets are often missing. The amount of liabilities corresponds more or less to gross debt. **Data and methodological notes on IMF Government Finance Statistics (GFS)** are available on the IMF website.

Box V3.2.3: Metadata for government finance statistics

The IMF's **General Data Dissemination System (GDDS)** provides guidance for the overall development of macroeconomic, financial, and socio-demographic data. Through the GDDS framework, countries are encouraged to improve data quality, evaluate needs for data improvement and set priorities in this respect, and disseminate reliable statistics.

One of the data categories covered by GDDS is government finance statistics. For many developing countries, key metadata for government finance statistics (e.g. who is responsible for compilation, accounting basis, key classifications, plans for improvements, etc.) can be found under 'Fiscal statistics' on the **IMF GDDS topics website**. However, this information may be out-of-date.

The IMF and AFRISTAT GDDS project for West Africa covered ten countries, including members of the West African Economic and Monetary Union (UEMOA). A program of activities on government finance statistics was developed in response to countries' requests, relating mainly to expansion of the coverage of government financial operations tables (TOFE) and its harmonization with regional standards, restoration of capacity to compile and disseminate GFS, and training of officials. Furthermore, courses and regional workshops on the implementation of the **2001 Government Finance Statistics Manual** were organised.

V3.2.4. Analysing data quality and identifying problems

The quality of statistics on government finances and the public sector critically depends on the quality of government and public finance management (PFM) and the accounting principles and practices. PFM and frameworks for assessing and improving PFM are not the same as government finance statistics. However, government finance statistics use data from government budgets and accounts. Therefore, weaknesses and quality problems of PFM are directly reflected in government finance statistics, causing problems in preparing accurate and internationally comparable statistics. However, PFM and frameworks for assessing and improving PFM are outside the scope of this chapter.

Because fiscal policy plays a central role in promoting development, the methodology of fiscal management in developing countries is regularly scrutinised by international organisations. There are various diagnostic and assessment methodologies for Public Financial Management (PFM), specifically suited to developing countries. These methodologies do not concern the system of government finance statistics directly, but the quality of PFM does influence the availability, integrity, timeliness and other characteristics of the sources used to compile government finance statistics.

Box V3.2.4: The Public Expenditure and Financial Accountability methodology

The [Public Expenditure and Financial Accountability \(PEFA\)](#) methodology for assessing public finance management is a modern and up-to-date initiative. PEFA has been applied to more than 60 countries through collaboration of local authorities and donor institutions.

PEFA examines the country practices from the following dimensions:

- **Credibility of the budget:** the budget is realistic and implemented as intended;
- **Comprehensiveness and transparency:** the fiscal risk is highlighted and information available to the public;
- **Predictability and control in the budget execution:** the budget is implemented in an orderly manner;
- **Accounting, auditing and reporting:** adequate information is produced and disseminated to meet control, management and reporting purposes;
- **External scrutiny and audit.**

The [PEFA PFM framework](#) uses 28 indicators, scored on a scale from A (highest) to D (lowest). It is structured into the categories:

- Comparing actual expenses and revenues to the original approved budget;
- Comprehensiveness and transparency of the PFM system;
- Budget cycle: performance of key systems, processes and institutions within central government.

The framework also assesses donor practices and the extent to which they affect the PFM performance.

There are several indicators that have direct relevance for assessing the quality of public finance statistics. Using the codes of PEFA, some of the most important indicators are:

- (PI-5) Classification in the budget: whether the budget applies administrative, economic and functional classification and the content of the classes are documented;
- (PI-6) Comprehensiveness of information included in the budget: if all revenue and expense of budget units are covered;
- (PI-7) Extent of unreported government operations: It may happen that extra-budgetary funds are not included in the budget. Government finance statistics should cover those funds as well;
- (PI-8) Transparency of inter-governmental fiscal relations: the existence of regular information flows among budget units is a precondition of providing short-term and annual statistics;
- (PI-9) Oversight of aggregate fiscal risk from other public sector entities: such entities should either be classified to the government sector, or the transactions should be rerouted through the government sector;
- (PI-10) Public access to key fiscal information;
- (PI-24) Quality and timeliness of in-year budget reports;
- (PI-25) Quality and timeliness of annual financial statements.

The indicators PI-7, PI-9, PI-26 and D-2 cover in part activities of central government implemented outside the budget.

The **Heavily Indebted Poor Country (HIPC) programme** was a forerunner to PEFA. It was a joint initiative of the World Bank, IMF and regional development banks, launched in 1996. HIPC uses 15 benchmarks to assess the budget management and to what extent the country is able to plan and execute programs and report on results. These benchmarks assess:

- the comprehensiveness of the budget,
- the classifications used in the budget and to what extent poverty-reducing expenditure are identified,
- the quality of multi-year expenditure projections,
- the quality of internal audit, and
- the timeliness of reporting.

Another diagnostic tool to assess strengths and weaknesses in a country's PFM system is the **Country Financial Accountability Assessment (CFAA)**, developed by the World Bank. Its purpose is to assess and manage the risk that public funds may be used for non-intended purposes: identify the key risks, capacity gaps and constraints to progress; help the government develop a strategy for reform; and assist in designing a program to improve financial management capacity in the public and private sectors. The scope and level of the CFAA's coverage takes account of the country's size, stage of development, and relationship with development partners. The website of the African Development Bank contains a number of **CFAA country reports**, both for African and other countries.

IMF regularly assesses the quality of government finance statistics, concerning timeliness, completeness, reliability, accessibility and consistency with statistical methodology. For more information and for country reports, see IMF's **Special Data Dissemination Standard (SDDS)** website. However, SDDS mainly covers developed and countries and countries in transition. More information can also be found in section B.2.4.1 and section C.5.3 of this Guide.

Measuring productivity and efficiency of government services raises important quality challenges. One has to establish quality-adjusted output measures, expressed mainly in physical terms. **'Total output in constant value'** is defined as the sum of these quantity indicators, combined using weights that reflect the costs of producing them. The output indicators should be defined in sufficient detail to ensure that they are kept homogeneous in time. Health and education are the two areas where quantity indicators are most easily available.

Government accounts do not use outcome indicators, but for policy analysis they may be more relevant than output measures. The efficiency of government services is measured as the ratio of output to costs of production at constant prices. Labour productivity is the ratio of output to labour input. To measure total factor productivity (TFP), capital input should also be estimated. For more on measuring non-market output in national accounts, see **SNA 2008** paragraphs 15.111-

15.120 and the **OECD handbook on "Measuring Government activity"**.

Administrative data from the budget of government and other public entities are usually audited. Therefore, one normally assumes that these data are relatively accurate and reliable. However, in order to produce statistics they must be modified according to the statistical accounting rules. Which way the budget data should be modified depends on the accounting rules used in the budget and by the budget units. For example, ESA and GFS apply accrual accounting whereas national budgets, especially in developing countries, are usually compiled on cash basis. To produce internationally comparable statistics, data from the legal budget may have to be transformed from cash basis to accrual basis. Other associated issues may be the inclusion of non-monetary transactions and the exclusion of flows not regarded as revenue (e.g. payments received from privatisation or revaluation of assets, most of all on reserve assets held in foreign currencies). However, in many developing countries other more basic issues might be more pressing.

V3.2.5. Improving sector statistics

Statistics on government finance and public sector is closely related to public finance management. The quality of the statistics is closely connected to the quality and definition of the data from government budgets, which form the basis for the statistics. Therefore, government finance statistics should be developed in coordination with budget support, activities to strengthen PFM and other administrative reform. Government finance statistics is important information for development planning, and is thus of vital interest both to governments in developing countries and to their development partners. A further aspect is whether funds are used efficiently and for the purposes intended.

PFM in each country is based on national legal and administrative traditions. Government finance statistics reflect this. It is therefore difficult to give advice for improvement of government finance statistics that will apply in each developing country. Instead, the approach must address the specific issues in the individual country, based on some general principles. First of all, the development of government finance statistics must go hand in hand with PFM development. In this process, the statistics should be developed in direction of compliance with the international statistical standards and concepts. A strategy should be devised for data collection and dissemination for the complete government finance accounts.

It is a key issue to bring together all stakeholders to discuss the information needs, core challenges and a common strategy. The stakeholders include the NSI, the Ministry of Finance and the central bank, as well as the treasury, line ministries and other key public institutions. The exact round of stakeholders is dependent on the national administrative system. The stakeholders also include donors. The strategy should be

developed within the frame of the NSDS and be integrated with any plans for administrative reform.

For statisticians, access to administrative budget data is important for developing good and comprehensive statistics. In this perspective, a number of issues should be addressed. However, the priorities critically depend on the national context:

- Clarify differences between budget concepts and government finance statistics concepts;
- The information system of the budget compilation should allow statisticians access to basic administrative data at a level as detailed as possible;
- Verify that all relevant transactions are registered in the budget data;
- Establish an asset register; if existing, update and assure maintenance;
- Establish a register of government units that are outside the budget coverage; if existing, update and assure maintenance;
- Assure that data from all relevant budget units are available; set up regular data collection on government units that are outside the budget;
- Assure that budget data are available within a reasonable time after the end of the budget year; if serious delays, develop strategy with responsible institutions to bring delay down;
- Investigate whether other sources, e.g. on financing, be used to cross-check and assess and calibrate data on government finance.

A close co-operation is required between the NSI, the ministry of finance and the central bank to establish and maintain good quality government finance statistics. Establishing a permanent forum of budget experts from these institutions is recommended. This forum should streamline cooperation, resolve conceptual problems and oversee development and maintenance.

The methodology of government finance statistics is sophisticated. Through statistical techniques and combination of data from multiple sources, government finance statistics may offer a fuller and more harmonised picture of government and public sector finances than budget data alone. However, government finance statistics require special knowledge and highly qualified staff. Specialised and tailored training courses are required to provide and keep up this knowledge. Furthermore, an active personnel policy for key staff is recommended in order to avoid 'brain drain' amongst key experts.

Box V3.2.5: How to build a statistical action in public finance in a former planned economy

Formerly planned economies inherited fairly developed statistical systems. However, these were tailored to the needs of central planning. For instance, no clear distinction was made between administrative sources and statistical surveys.

In Serbia and Montenegro, in the past the NSIs collected data on budget units in the same way as on business enterprises. The compilation of the budget execution relied on administrative sources. As it is very troublesome to regularly reconcile different data sources at micro level, a serious cause of data error is inherent in such data collections.

Within the EU funded national CARDS 2004 project on national accounts, a project component was devoted to provide estimates on the provision of government services and on their final consumption in compliance with the requirements of ESA95 methodology, taking into consideration the limited resources. For the production of GDP estimates, data on government output and on government final consumption are indispensable.

The project suggested not to constrain the efforts on the compilation of the government output and final consumption, but to set up a strategy on how to build a data collection and dissemination mechanism for the complete government finance accounts. The strategy included:

1. The establishment of a forum at management level for those government agencies that collect and use data on government transactions in their daily work. The NSI, the Ministry of Finance (MoF) and the National Bank (NB) are the core participants. The inclusion of other agencies – like the Treasury and line ministries – depends on how the institutional responsibilities are divided. Data on elementary revenue and expense transactions are managed in the MoF. Usually, the NB collects data on financial flows and stocks in the frame of monetary statistics. The NSI is engaged in national accounts and is responsible for submitting data on government accounts to international institutions.
2. The establishment of a permanent working group at expert level, including the staff of the relevant agencies engaged in data collection, processing and analysing. Good quality government finance statistics necessitates the continuous close co-operation of NSI, MoF and NB. It provides the opportunity to check data on government finance from "mirror sources"; data coming from the official budget can be checked with data on financing, usually collected by the NB. Government accounts should be reconciled with data of other national accounts sectors compiled by the NSI.
3. Organisation of training courses in government finance for the staff of statisticians and budget experts. Government finance is a sophisticated methodology, so to implement it requires special knowledge. Examples tailored to the situation in the beneficiary country: for instance clarify the differences of the budget concepts and the government finance statistics categories.
4. Initiating the extension of the information system of the budget compilation, so that the statisticians can have access to basic administrative data at a level as detailed as possible. The differences between the statistical methodology and the business accounting rules used by the budget units should be clarified.
5. Initiating regular data collections on government units which are outside the budget coverage. A register of such units should be maintained.

To find out more...**Methodological documents on government finance and public sector statistics**

- IMF: [Government Finance Statistics Manual 2001 \(GFSM 2001\)](#)
- IMF: [Government Finance Statistics \(GFS\) – Data, Companion Materials, and Research](#)
- Eurostat: [GFS methodology under ESA 2010 and ESA 2010 Manual on government deficit and debt](#)

Public Financial Management (PFM) assessment tools

- PEFA: [PEFA PFM framework](#)
- World Bank: [Country Financial Accountability Assessment \(CFAA\)](#)
- ADB: [CFAA country reports](#)

Databases:

- IMF: [General Data Dissemination System metadata – country reports and sector reports](#)
- IMF: [IMF Data Mapper](#)
- OECD: [Public governance and management](#)
- Eurostat: [Government Finance Statistics database](#)
- UN Statistics Division: [National Accounts Statistics database](#)

Methodological documents on budget compilation and presentation

- OECD: [International Budget Practices and Procedures Database](#)
- IMF: [Manual on Fiscal Transparency](#)
- IMF: [Reports on the Observance of Standards and Codes \(ROSCs\)](#)
- International Public Sector Accounting Standards Board (IP-SASB): [International Public Sector Accounting Standards \(IPSAS\)](#)

Analyses on budget developments

- OECD: [Government at a Glance](#)
- International Federation of Accountants (IFAC): [Reporting on the Long-Term Sustainability of Public Finances](#)
- European Commission – DG ECFIN: [Public Finances in EMU](#)

V3.3

Price statistics



V3.3. Price statistics

The chapter in brief

This chapter covers the full range of price statistics, concentrating on the main indicators. It starts with the policy applications of price data. The emphasis is on explaining the differences between the various measures of prices and inflation.

The main price indicators and activities are presented. These are the Consumer Price Index, Harmonised Consumer Price Indices, the Producer Price Index, Export and Import Price and Unit Value Indices, prices in the National Accounts and Purchasing Power Parities. Each section starts with an explanation of the applications of the data. Emphasis is placed on issues relating to developing countries.

The chapter then identifies the main national and international data sources for price statistics, which are relatively straightforward and accessible. The chapter then looks at how to examine the quality of price data.

The chapter concludes with recommendations on how to improve price statistics.

V3.3.1. Policy applications of the data

Prices are used everywhere and every day to measure the relative value of goods and services in terms of money.

Price statistics are used to measure changes in the relative values of goods and services, to measure changes in the overall price level – inflation, price stability or disinflation – and to compare the overall level of prices between countries.

The most widespread use of price statistics is to measure inflation. There is no single measure of price changes that is useful for all purposes. Instead, various indices are used for different purposes, including the following:

- The Consumer Price Index (CPI);
- The Producer Price Index (PPI);
- The GDP (Gross Domestic Product) deflator.

The CPI is the most common measure of inflation because it is available monthly in most countries, it is often published rapidly and its meaning can fairly easily be understood. The CPI is used to alter the price of commercial contracts in response to inflation – this is called price indexation. Contracts that include price indexation clauses can include rents, wages, social protection benefits or financial instruments such as interest payments. The CPI is also a mean for evaluating changes in living standards.

The CPI is commonly used to represent the overall inflation rate of an economy, even though the index covers only consumer expenditure. The advantage of using the CPI is its frequency and rapidity of publication. Monetary policies, such as inflation targets, use the CPI for these reasons.

Many developing countries compile a Producer price index PPI on a monthly or quarterly basis. This is a measure of the cost of goods as they leave the factory. The PPI is therefore an advance or ‘leading’ indicator of inflation. However, it is more difficult to produce an accurate PPI than the CPI in many developing countries. The GDP deflator is more demanding still to calculate. It is produced on a quarterly basis in developed and many middle income countries and in some low income countries, usually on an annual basis. Its production always takes longer than the CPI or PPI.

Consumers, businesses, government and investors often need to understand whether a particular price, of petrol or telephone services for example, is increasing relative to other prices. In regulated sectors, there is a clear policy interest in analysing sector price changes relative to other sectors. Telecommunications is a good example, as are the prices of agricultural products (see section V4.3.2.3). The CPI and PPI provide useful information for this purpose. Specific sector price statistics may also be published but this is not common in developing countries.

External trade policy proposals require price information as an input to analysing the potential impact of trade liberalisation, for example. Export and import price indices or unit prices provide the necessary information.

The CPI can also be used to compare inflation rates and hence inflation policy outcomes between countries.

When economies are closely linked and share common policies, such as a common currency, comparing inflation rates becomes very important. To ensure that the comparisons are meaningful, the participating countries must harmonise their consumer price indices. Harmonising price statistics means adopting a common nomenclature and methodologies; national consumption baskets can be maintained. The EU harmonised index of consumer prices is known as the HICP.

An HICP can also be used at sector level to compare the effects of changes in energy prices, for example, on each country’s price level.

Comparing price levels between countries is important for a variety of uses. One set of measures of relative price levels are known as purchasing power parities (PPPs). These are ‘exchange’ rates that are based on the actual cost of comparable goods and services. PPPs convert GDP and other measures of value into a common, technical currency, eliminating the effect of price level differences across countries. Currency exchange rates do not meet these policy needs because they are determined not only by price level differences, but by other factors as well. The PPP exchange rate is therefore a measure of the difference in the price level between countries.

International and regional policy purposes where PPPs are used include: ⁽²⁹⁾

- International poverty headcount index (World Bank)
- Comparing relative sizes of economies and estimating weighted averages of regional growth rates (IMF)
- Allocation of structural and cohesion funds (European Commission)
- Human Development Index (UNDP)
- Gender empowerment measures (UNDP)
- Health inequality assessment (World Health Organization)
- Assessing per capita expenditures in education (U.N. Educational, Scientific and Cultural Organization)
- Monitoring the welfare of children (U.N. Children's Fund)
- Designing effective aid programs (International Organizations)

Other uses of PPPs include:

Analysis of an economy's comparative advantage on prices and expenditures of goods or services (national policy makers)

Evaluation of investment costs and industry growth potential across countries

PPP adjusted cost of living allowances (users include EU, UN, OECD, NATO, international agencies, non-government organisations and multinational corporations)

Selecting the price statistics that are based on the most appropriate concept is particularly important in analysing open developing economies. This is because prices in different parts of the economy can change considerably relative to one another. For example, consumer goods prices might increase much more slowly than investment goods prices after a currency devaluation.

The policy profile of the CPI is among the highest of any official statistics because of its direct relevance to the population, its easily understood nature and its frequency. In many developing countries, the CPI is the only statistics series that is regularly updated on the National Statistics Institute's website. Newspaper reports of the CPI are common in many, perhaps most, countries. High or rising inflation as measured by the CPI is used as common basis for accusations of government policy failure, whether justified or not. It is also a common tactic to accuse governments of manipulating the CPI, once more whether this is justified or not. For these reasons, it is very important that the way that the CPI is measured is accurate and transparent.

The importance of the CPI to economic policy, its relative ease of collection and its public profile mean that it is usually accorded a high priority in developing countries. The PPI and related indices are also often given a fairly high priority, although achieving reasonable accuracy requires a considerable sustained effort. Import and export price indices

⁽²⁹⁾ World Bank: [Major uses of PPP results](#)

often have a lower profile, partly due to the difficulties in their compilation. GDP deflator calculation is often accorded a fairly low profile in developing countries due to capacity constraints.

V3.3.2. Concepts and definitions

V3.3.2.1 OVERVIEW

This chapter covers any statistical activity dealing with prices, like Consumer Price Indices (CPI), inflation, Producer Price Indices (PPI), price indexes for specific products and services (e.g. Information and Communication Technology products), Purchasing Power Parities (PPPs), and international comparisons of GDP. Not covered here are interest rates, wages and currency exchange rates.

As we saw in the section above on uses of data, price statistics are designed to record price levels and changes in different parts of the economy:

- The Consumer Price Index (CPI) measures the changes over time in the price paid for a basket of goods and services that is representative of consumer expenditure;
- The Producer Price Index (PPI) measures the average change over time in the basic prices actually received by producers of goods and services.
- The GDP (Gross Domestic Product) deflator is a measure of inflation in the whole economy, taken from national accounts data.

Only the GDP deflator (and series related to it) is a measure of price changes in the economy as a whole. This comes at the cost of less frequent publication, a longer time needed for its preparation and increased complexity, hence its non-availability in some developing countries.

Most price statistics series are usually indices. A price **index** can be understood as an aggregate price of all the different items (goods and services) that are included in a representative 'basket'. In its base period a price index is given a value such as 100; index values for later periods indicate the subsequent average change in prices from the base period. The (CPI) consumption **basket** (or product list) is a weighted list of goods and services that are acquired or used by consumers, in the case of the CPI. The PPI basket is the weighted list of goods and services sold to domestic businesses. The **weights** are numbers that reflect the relative importance of each item as part of the total basket.

How are the basket and its weights set up? In the base year, a detailed survey or census is used to collect precise information about the goods and services exchanged and the prices paid or received for them. A household expenditure survey is usually used for the consumer price index. A business census or detailed survey is needed for the PPI. The goods and services bought or sold are organised into **elementary groups** of similar items according to a standard **classification**. Within each elementary group, **representative** items are selected. Their price movements, taken together, provide a good estimate of the overall change in prices for the elementary group as a whole. The price change of the elementary group is calculated as the average change in the prices of these items from the base year average. The price changes of each elementary group are progressively **aggregated** to the overall index using the expenditure weights.

The basket of representative goods and services needs to be changed to reflect changes in consumer preferences as well as the emergence of new products. Therefore, the basket should be updated as often as possible. In developed countries, the objective is to update baskets yearly. The data and resources required may be too onerous for some countries, so that updates occur at lower frequency. This issue is looked at in more detail in section V3.3.2.2 below.

The concept of ‘representative’ goods and services was introduced above at the level of the elementary group. Representative goods and services are selected for the baskets of national consumer and producer price indices. Where price indices are required to be **comparable** internationally, a weaker test is sometimes used to select goods and services than representativeness: their **relevance**. A good or service is relevant if it is commonly available in the usual markets. The characteristics of comparability and representativeness of goods and services are often not fully compatible.

The ideas of **random selection** and of **coverage** are important for analysing the quality of consumer price surveys. For a price survey to be unbiased, the price of any given exchange of goods or services must have an equal probability of being measured than any other. This type of selection is known as **random sampling**. However, prices can vary between different parts of a country and between rural and urban areas. Prices can also be different in various outlet types within the same region. Outlets for the price survey are therefore selected to reflect the value of transactions that are made in each region and each type of outlet. The information on the value of purchases made in each region and each type of outlet should be taken from a household income and expenditure survey, supplemented with other data sources. **Stratified random** sampling requires that the price of any exchange of goods or services has an equal probability of being measured, while allowing for different categories or strata of transaction.

The final concept that needs to be presented is timeliness: the rapid, consistent and predictable dissemination is perhaps more important in the field of price statistics than any other. Not all prices can be collected within the time horizon and estimations that use partial data are often compiled and disseminated. If estimations are used for the main CPI, then a **revision** may be published with the next month’s data, the revised figure being final.

V3.3.2.2 THE CONSUMER PRICE INDEX

The international reference ‘Consumer price index manual: Theory and practice’⁽⁴⁰⁾, defines the CPI as:

“... an index that measures the rate at which the prices of consumption goods and services are changing from month to month (or from quarter to quarter). The prices are collected from shops or other retail outlets. The usual method of calculation is to take an average of the period-to-period price changes for the different products, using as weights the average amounts that households spend on them. CPIs are official statistics that are usually produced by national statistical offices, ministries of labour or central banks. They are published as quickly as possible, typically about ten days after the end of the most recent month or quarter.”

In most countries, the CPI is based on a monthly survey in which price data is collected from points of sale. This data is supplemented by prices collected from service providers, such as electricity, telecommunications and postal services. In developing countries, the almost exclusive method of price collection is that statistical officers physically visit the points of sale. The usual process is that data is collected on paper forms, entered on computer, transmitted to the national centre and checked at various stages. The procedures vary considerably between countries, the logistics often being complicated. The use of hand-held computers or telephones to enter data is not yet common in developing countries but has been pilot tested, at least.⁽⁴¹⁾

The consumer price index is so central to official statistics that it is worth a close look. The main text deals with the main issues from a general perspective. Box V3.3.1 examines in more detail how a CPI is produced.

⁽⁴⁰⁾ Published 2004 by the International working group on price statistics, consisting of ILO/IMF/OECD/ UNECE/ Eurostat/ World Bank (p xix)

⁽⁴¹⁾ ‘The Use of Hand-Held Computers for the Collection CPI Price Data’, David Fenwick and Ben Whitestone, African Statistics Journal, Vol 8, 2009

The CPI basket of goods and services needs to reflect the detailed structure of all consumption of residents. The source of this information is a detailed national survey such as a household expenditure survey (HES). The Consumer price index manual notes that (pp 22-23):

“An HES is a sample survey of thousands of households that are asked to keep records of their expenditures on different kinds of consumer goods and services over a specified period of time, such as a week or longer. The size of the sample obviously depends on the resources available, but also on the extent to which it is desired to break down the survey results by region or type of household. HESs are costly operations.”

Household expenditure surveys are considered in greater depth in chapter V3.7 Income and Consumption. The key issue here is that the HES needs to be designed with the consumer price index in mind. The nomenclature of consumer goods and services adopted in the HES needs to be compatible with the national classification of consumption transactions, normally COICOP. Since updating the CPI is not the primary purpose of the HES, the desired outcome requires the two departments both to appreciate the need for effective coordination and to carry it out. This is not always the case.

In developing countries, HESs are undertaken and the weights recalculated at best every five years. The ‘Consumer Price Index Manual’ notes⁽⁴²⁾ that the “2003 ICLS [International Conference of Labour Statisticians] resolution proposes more frequent updates of the weights, such as once every five years, to ensure their relevance. Countries which are experiencing significant economic changes and thus more rapid changes in consumption patterns should update their weights even more frequently, say annually.” Elsewhere, the manual suggests that adding small, targeted consumer surveys to the 5-year cycle can be beneficial.

The Consumer price index manual also discusses the use of independent national accounts data to supplement HESs. However, this is not usually applied in developing countries, due to the capacity constraints in national accounts that were discussed in chapter V3.1 ‘National Accounts, Economic Accounts, Non-Observed Economy’. National accounts data is one main source of the basket weighting system used in the HICP.

The CPI should, as we have seen, cover all consumer transactions in goods and services. The price survey should therefore represent the geographical distribution of consumer transactions. However, in some developing countries, only urban areas are covered or even only the major city. Limiting geographical coverage gives the CPI an urban bias, which is detrimental to its accuracy. This is especially the case in countries where prices can change at different rates in different regions.

Box V3.3.1: Producing a consumer price index

Consumer price indices provide regular measures of changes in consumer prices that need to be unbiased and comparable. There is a standard framework that allows countries to produce a CPI that reflects national needs and the available budget. This framework consists of:

- The classification of goods and services;
- The methods used to define the basket of goods and services and their weights;
- The calculations used to derive unbiased measures of the average price changes

The [Classification of Individual Consumption by Purpose \(COICOP, 1999 version\)](#) is the standard classification or nomenclature used to identify and classify all consumer transactions in goods and services. In the EU, a slightly modified version of COICOP is used for the Harmonised Index of Consumer Prices. These systems are tree-shaped or hierarchical: total consumption is represented by the trunk, sector aggregates of goods or services are represented by large branches and specific goods and services by the smallest branches.

Specific, representative goods and services are selected from a household budget survey to cover a large proportion of household expenditure. Similar goods and services are organised into ‘elementary’ groups, using the classification system. In economic terms, each elementary group is made up of goods and services that are close substitutes for one another.

The index for each elementary group of goods and services is calculated first. **Weights may be calculated or estimated from the household budget survey to represent the proportional expenditure on each item and / or to take into account the amount spent in different types of points of sale.** Weights may not be used at the elementary level if the household budget survey is not extensive enough to give sufficient knowledge about the relative amounts spent on each item.⁽⁴³⁾

The next step is to calculate price indices for higher level groups that cover a wider proportion of consumption. The overall consumer price index is calculated at the top level. At each level, the index is calculated as the weighted average of the changes in its components. The weights for these higher level aggregates are taken from the household budget survey. Regional consumer price indices are aggregated to a national index in much the same way.

At each level, the aggregate index is calculated as the arithmetic or (preferably) the geometric mean of the relative price changes of each of its components. **The method that is usually used for the CPI calculates the (weighted) average price change over time for a price of a basket of goods and services that was fixed in a base period, usually a base year.** This is known as a **Laspeyres price index**.

Although the CPI is often used as a measure of the cost of living, a Laspeyres price index is not a true cost of living index. This is because consumers are likely to buy more of goods and services that become relatively cheaper over time and less of those that become more expensive. As the base year becomes more distant in the past, the upward bias becomes greater. In some developed countries, the weights are now updated every year, a process called ‘chaining’. A true cost of living index can be calculated by using both the current year and the previous year as the base periods.

The CPI is validated, tabulated, analysed and disseminated. As the CPI results can be presented in a quite compact table, dissemination via internet is fairly common. In many developing countries, the CPI is the only statistical dataset regularly updated on an NSI website.

⁽⁴²⁾ chapter 4, para 4.50 page 65

⁽⁴³⁾ Consumer price index manual: Theory and practice paragraphs 1.124 – 1.126, page 15

Clearly, extending the price collection survey to a wider area is costly and may be difficult to organise, especially outside major urban areas. On the other hand, consumption transactions are more concentrated in urban areas. Hence, only a relatively small geographical extension of the survey outside of major urban areas may be necessary. It is possible to analyse whether price changes are significantly different between regions on the basis of a pilot price survey or other data sets.

Another type of restriction on CPI coverage occurs when only certain types of outlets are covered by the price survey: only traditional markets, for example, or only shops or supermarkets. Price levels and changes are often different in different outlet types. Full prices survey coverage therefore requires that all existing types of outlets, such as supermarkets, local or traditional shops, open markets, roadside stalls and itinerant hawkers need to be surveyed. As soon as internet-based sales become significant in developing countries, they also need to be included.

Although the CPI needs to have national coverage, there exists a wide range of policy questions for which measures of price changes are needed that concern parts of a country's economy. The most evident of these are regional price indices, as well as indices that cover only urban or rural expenditure. Where there exists a large disparity in income and wealth between the richest and poorest of the country, the much greater expenditure of the wealthy will dominate the overall CPI. In this situation, one possibility would be to prepare 'sub-indices' based on, for example, the expenditure baskets of the lower quartile, the middle two quartiles and the upper quartile of the population by income. Alternatively, some countries exclude the expenditure of the highest earners⁽⁴⁴⁾. In this case, the resulting index is better at measuring the cost of living as perceived by the majority of the population than it is at measuring overall inflation.

Many goods and services are only available or only widely purchased during part of a year: seasonal fruits and vegetables and clothing are two obvious examples. The problem of 'seasonality' can be addressed, for example, by replacing seasonal goods by those of other seasons. The monthly changes in year-on-year price differences of seasonal goods need to be applied. Chapter V.2.3 of the Consumer Price Index Manual considers the problem at length.

A similar problem is that of quality change. For example, new models of mobile telephones, cars and computers have an improved performance than those they replace, in that consumers prefer the characteristics of the new product to the old ones. This is a particular problem in developing countries: new and improved products are continually introduced to the market and appropriate methods need to be applied.

Statisticians need both training and experience to know how to identify and apply an appropriate solution to these problems. Developing countries can find it difficult to keep these skilled staff within price statistics units that are mostly involved in relatively routine operations.

Compilation of the CPI is usually carried out using a software package based on a database. Some developing countries still use spreadsheets. The CPI software applies the methods used to average price movements. In some developing countries, the CPI compilation software was developed and implemented many years ago by external consultants using then-current databases. Even if the software was correctly documented and programmed, it may no longer be able to be updated and those using it may not understand its calculations. In a (theoretical) worst case situation, the classifications and basket weights may be fixed and the methods used to calculate the price aggregates not appropriate.

V3.3.2.3 HARMONISED CONSUMER PRICE INDICES

Any discussion of the CPI needs to be completed by analysis of harmonised Consumer Price Indices. These are used for comparing policy outcomes and are particularly important for monetary policy in monetary unions. The Harmonized Index of Consumer Prices (HICP), which is compiled by the European Statistical System (ESS), is inevitably a point of reference for harmonised CPIs. The Eurostat publication, '[Harmonized Indices of Consumer Prices \(HICPs\) - A Short Guide for Users](#)' (2004) is a very useful source of information, including for this chapter. It is relevant for developing countries.

The EU HICP has a number of differences from some member states' previously existing national CPIs. These are generally due to the HICP's objective of efficiently and correctly informing monetary policy. Some EU Member States, including the UK and Ireland, maintain distinct national consumer cost of living indices. They do so because of existing legislation that links prices of financial assets such as bonds, as well as pension payments, to these indices. There is a cost in maintaining two sets of price indices.

In developing countries, harmonised CPIs are only embarked upon if there is an overwhelming policy need. The West African Economic and Monetary Union (Union Economique et Monétaire Ouest Africaine, UEMOA) requires a harmonised regional price index to inform its monetary policy. The [Indice Harmonisé des Prix à la Consommation \(IHPC\)](#) (English: Harmonised Index of Consumer Prices) has covered the eight UEMOA members since 1997. Data is available monthly on the UEMOA website. Further information is given in Box 3.3.2.

⁽⁴⁴⁾ One example is the [UK Retail Prices Index \(RPI\)](#), which also excludes pensioner households who are dependent mainly on state benefits. The UK CPI, a component of the European HICP does not exclude these groups.

Box V3.3.2: West African harmonised index of consumer prices

The West African Economic and Monetary Union (Union Economique et Monétaire Ouest Africaine, UEMOA) operates a harmonised regional consumer price index (Indice Harmonisé des Prix à la Consommation, IHPC) to inform its monetary policy. Eight countries participate. The regional consumer price index, national indices and regional sector sub-indices are published on the UEMOA website monthly, although sometimes with a time lag of up to three months.

IHPC methodology is defined by UEMOA regulation 05/97/CM of 16th December 1997. The IHPC covers the main urban area of each participating country, based on the common West African Consumption Nomenclature (Nomenclature de Consommation Ouest Africaine, NCOA). The consumption weights currently in use date from a 1996 household expenditure survey of 1000 households in each main urban area. A common methodology is required to be used in all eight member states.

The definition of consumption is that of the national accounts. The reference population consists of all resident African households. The consumption basket covers at least 300 items, measured in at least 190 outlets through the urban area. It covers all types of retail outlet: markets, street stalls, shops, supermarkets, public and private service providers and others.

The UEMOA price index is calculated as the weighted average of CPIs of the UEMOA Member States. Each country's weight is equal to the share of its main urban area consumption expenditure in the total household consumption in the urban areas of all member states.

A renewal of IHPC weights, outlets and calculation methods has been planned since 2009, under the coordination of Afristat.

Sources: UEMOA IHPC website; Afristat IHPC website

The Common Market for Eastern and Southern Africa (COMESA) is adopting a Harmonised Consumer Price Index (HCPI-COMESA), based on a harmonised methodological and conceptual approach⁽⁴⁵⁾. The HCPI-COMESA will be used for measuring regional price stability and macroeconomic convergence and for international comparison of inflation. This objective indicator of regional price changes is intended to act as a pointer to the regional market for the investment community.

Regulations relating to key issues of the HCPI-COMESA were adopted in August 2010: product coverage; index formulae; data transmission and publications standards; coverage and sampling of outlet types; treatment of seasonal products and second hand goods; weights, the product sample and item substitution; and the application of the domestic concept. Month on month price changes for an interim HCPI-COMESA have been published on the COMESA website starting in 2011. A second stage HCPI-COMESA is expected in 2013. Technical papers, including a user guide, are available from the [COMESA's COMSTAT website](#).

V3.3.2.4 THE PRODUCER PRICE INDEX

Producer prices are used to measure changes in the prices of intermediate goods and services in transactions between companies. The main use of the producer price index (PPI) is as an advance or leading indicator of inflation, although it does not always act as a leading indicator of the CPI. Another use of the PPI is to deflate company revenue streams in order to measure real changes in output. In the national accounts, the PPI is a data source used to deflate output or sales data and capital expenditure and inventory (stocks) data. PPIs and their components are also used to index long-term contracts, such as in materials costs. The PPI is used in current cost accounting. PPIs have supplanted the former Wholesale Price Indices (WPIs).

The reference document for PPIs is the 'Producer Price Index Manual: Theory and Practice'. This was prepared by the Inter-Secretariat Working Group on Price Statistics (IWGPS) and published by the IMF in 2004 on behalf of the group. The Manual defines the PPI (p66) as 'an index designed to measure the average change in the price of goods and services either as they leave the place of production or as they enter the production process.' The relevant prices for a PPI should be the basic prices actually received by the producing establishment for sales within a country.⁽⁴⁶⁾

As with the CPI, the PPI is usually published monthly but in some countries quarterly. PPIs are usually available about two weeks after the end of the reference period. PPIs can be used to measure either output or input prices. As with the CPI, regional sub-indices can be calculated. An important sub-index is that covering the prices of investment goods and construction works, as these are used for the investment component in national accounts.

Producer prices are collected as part of the business survey cycle, which is described in chapter V3.5 Business Statistics.

Specific surveys are often carried out for key sectors such as agriculture and mining, for construction and for other regulated sectors. These surveys also provide source data for the PPIs.

The international product classification recommended by the Producer Price Index Manual for PPIs is the [Central Product Classification \(CPC\) version 2](#). (The EU equivalent is the Classification of Products by Activity (CPA)). The CPC Ver. 2 subclasses consist of goods and services that are predominantly produced in one specific class or classes of the ISIC Revision 4 classification of economic activities (see also chapter V3.5 Business statistics).

Statistical issues that the PPI shares with the CPI include seasonality and coverage. Some developing countries restrict coverage to key industries. Coverage issues specific to the PPI include how intra-company transfer prices and capital formation on own account are treated.

⁽⁴⁵⁾ SADC is represented in the preparatory working groups, as is EAC. Tanzania, which is not a COMESA member, is expected to adopt the HCPI-COMESA in 2011.

⁽⁴⁶⁾ Producer Price Index Manual, Chapter 1, paragraph 1.201, page 37.

To the discussion of the business survey in Chapter V3.1 can be added that many lower middle income and lower income countries have significant difficulties in this area. Problems arise both in maintaining an up-to-date business register and in obtaining full and correct responses to the business surveys. The difficulties with obtaining responses to business surveys are partly due to a lack of understanding among business people of the need for statistics. They may partly also be due to concerns – justified or not – about misuse of the information provided. **The Guide recommends that plans to support PPI or business survey improvement should be critically reviewed whenever there is reason to suspect that the information could be misused.**

V3.3.2.5 IMPORT AND EXPORT PRICES

The main uses of export and import prices are for the national accounts, to measure price changes in trade with the rest of the world, and as a short term indicator of changing prices in the external sector. For example, following a currency devaluation, a key policy issue is to know how quickly prices of imports are responding and affecting prices in the rest of the economy.

The international reference document in this area is the ‘Export and Import Price Index Manual: Theory and Practice’, published by the IMF in 2009 on behalf of the [Inter-Secretariat Working Group on Price Statistics \(IWGPS\)](#). This provides the following definition (Preface, page xiii):

“Export and import price indices (XMPIs) for a country measure the rate of change over time in the prices of exported and imported goods and services. An export price index (XPI) measures the rate of change in the prices of goods and services sold by residents of that country to, and used by, foreign buyers. An import price index (MPI) measures the rate of change in the prices of goods and services purchased by residents of that country from, and supplied by, foreign sellers.”

The Manual draws a key distinction between two methods of collecting prices for exports and imports:

- Export and import unit value indices, based on international merchandise trade statistics;
- Export and import price indices, based on establishment price survey data, as with PPIs.

Unit values are average prices of similar exports or imports that are calculated from price and quantity data.

The Manual recommends (page xiv) that:

“... countries using unit value indices with limited resources undertake a staged progression to price indices primarily based on establishment surveys. The initial stage will be to collect price data from establishments responsible for relatively high proportions of exports and imports, particularly those with a relatively large weight and whose

unit value indices are at first view inadequate measures of price changes... It may be that the progression is much quicker, to prepare for the formation of a customs union and loss of intra-union trade data. If the country compiles a producer price index (PPI), much of the technical skills required, and the basis for data collection, will be in place.” ⁽⁴⁷⁾

This appears to be a very challenging recommendation for many low income and some middle income countries. As explained in section V3.3.2.4 on PPIs, many developing countries find it difficult to collect data systematically from all but the largest companies. On the other hand, these major companies often carry out a large proportion of international trade. The strategy described by the Manual is based on starting trade price data collection with these companies.

The remainder of this section is concerned with examining how international trade statistics are used to derive import and export unit value indices. Collecting the prices of imports and exports can also be difficult for many developing countries to implement consistently. Although it is possibly cheaper, the Manual considers that this method does not yield as accurate results as collecting trade price data from trading companies.

Trade volume data (i.e. quantity in net mass or in supplementary quantity) is less widely collected and validated in some developing countries than is data on the money value of imports and exports. This situation could be more pronounced for exports than for imports in some countries because trade statistics systems are based on Customs reporting. Customs services have an inevitably greater interest in imports that attract tariff revenue than in exports. Moreover, since most tariffs are based on value, less attention is paid to volume data.

Problems with collecting the volume data that are needed to calculate import and export unit values can be addressed through improved formalised co-operation with Customs organisations. In common with other trade statistics, unrecorded trade has a detrimental effect on the quality of import and export unit values.

A standard check on developing country trade statistics is the use of [reconciliation or mirror trade statistics](#). These are valued differently from directly measured trade statistics ⁽⁴⁸⁾ and so their use is limited at best for export and import unit value indices.

⁽⁴⁷⁾ A contrary recommendation is made in the Producer Price Index Manual (page 68, paragraph 2.48). However, the ‘Export and Import Price Index Manual’ is more recent.

⁽⁴⁸⁾ cif for exports and fob for imports

V3.3.2.6 PRICES IN THE NATIONAL ACCOUNTS

The national accounts and the SNA are covered in chapter D.11. National accounts use appropriate price statistics as 'deflators' to convert current price to constant price data series. Constant price data series are statistics where the effects of price changes between one period and the next have been removed.

Change in GDP, one of the most commonly quoted statistics, is a constant price statistic. Constant price GDP requires the use of a wide range of deflators based on price statistics, including the CPI, PPI, export and import price indices and investment price indices.

In developing countries where the full range of price indices is not available, the tendency is to substitute the CPI for the appropriate price concept. This introduces an inaccuracy into the national accounts and so into the measurement of GDP.

V3.3.2.7 PURCHASING POWER PARITIES

Purchasing power parities (PPPs) are indicators of price level differences across countries. They indicate how many currency units a particular quantity of goods and services costs in different countries.

PPPs are primarily used as currency conversion rates in order to convert expenditures expressed in national currencies into an artificial common currency. This eliminates the effect of price level differences across countries and ensuring international comparability. They can also be used to analyse the differences in price levels between countries.

The International Comparison Program (ICP) is a worldwide statistical partnership. It collects comparative price data, compiles detailed expenditure values of gross domestic product (GDP) and estimates purchasing power parities (PPPs). The Eurostat-OECD PPP Programme is a distinct statistical partnership that cooperates closely with the ICP and provides the PPPs for European and OECD countries. Eurostat and OECD have jointly published a [methodological manual on PPPs. Data on comparative price levels and GDP PPPs](#) are published for the countries of the OECD region. PPP data is also available from [EUROBASE, Eurostat's free dissemination database](#).

The ICP is currently being implemented as a global initiative for the second time, with the reference year 2011. It will engage in methodological research and review, survey activities and data processing and analysis. The areas covered are price statistics, national accounts and fields related to estimating the PPPs of the world's principal economies. PPP data from the previous 2005 ICP round, as well as methodological and procedural papers are available from the [World Bank's ICP website](#).

The Global Office of the International Comparison Program is managed through the World Bank. Data from the 2005 ICP and previous rounds are available from their website. Regional programmes are managed by regional organisations. For example, [ICP-Africa](#) is managed by the African Development Bank (AfDB); ICP in Asia and the Pacific by the Asian Development Bank. ICP-Africa aims, in addition to producing PPPs, to strengthen national statistical capacity and assist countries to implement the 1993 System of National Accounts (SNA93). One application is a PPP-based poverty measurement research study that involves the compilation of a set of PPPs more appropriate for making the MDG USD1-USD 2/day poverty lines more operational.

ICP-Africa implementation is organised through sub-regional organisations: [Afristat](#), COMESA, ECOWAS and SADC. This procedure will enable uniform quality standards to be set, capacity building to be undertaken and the data becoming rapidly available locally for national analyses.

V3.3.3. Sources of data and metadata

Data on the CPI is often the only national data series which is published on a developing country's website. The NSI is the usual producer of the CPI and PPI but in some countries these are published by the Central Bank.

The primary global source of price statistics is the [IMF International Financial Statistics publication and database](#). Line 63 covers Producer or Wholesale Prices. Line 64 covers the Consumer Price Index. Export and import unit values (lines 74 and 75) and direct export and import prices (line 76) compiled through the business survey, are included. The IMF is also the main source of metadata on price statistics through the [GDDS](#): specific standards exist for CPIs and PPIs and country methodologies are posted.

[IMF data for CPIs](#) is available via the World Bank.

The [International Comparison Program](#) data and metadata are available from the World Bank website.

On its website, Eurostat provides free data and methodological notes and guidelines on the [Harmonised Indices of Consumer Prices \(HICP\)](#) and [Purchasing Power Parities \(PPPs\)](#). Data and information on the Producer Price Index and the Import Price Index are available in the web section on [Short-Term Business Statistics](#).

The [OECD compiles and publishes consumer price indices, domestic and total producer price indices, and PPPs](#).

V3.3.4. Analysing data quality and identifying problems

The quality of data depends on its coverage, the timeliness of the published figures and their compliance with the agreed methodology. For comparisons and analyses, international standards and classifications should be respected.

For each price index or activity, the following analysis should identify any problem areas in:

- Conducting the price survey
- Basket of goods and services and / or weights and / or classification
- Price survey coverage and / or sample
- Processing the price survey
- Tabulation, analysis and / or dissemination
- Metadata documentation

V3.3.4.1 THE CONSUMER PRICE INDEX

1. Basic analysis of the Consumer Price Index is fairly straightforward:
 - Does the CPI appear every month at the same time? Does it take less than a month to publish after the end of the reference month ⁽⁴⁹⁾?
 - Is the CPI monthly release readily available, preferably both on paper and via the internet?
 - Does the CPI release give price changes over the last month and the last 12 months for both the CPI as a whole and for its major components?
 - In the CPI release, is there a clear explanation of the major price changes and a contact point for further information?
 - Is the previous month's figure ever revised? Are revisions clearly indicated?
 - Is there an annual publication that provides a long CPI time series?
2. The next analysis looks at the coverage and the relevance of the CPI survey:
 - Is there a methodological or 'sources and methods' document that is available? Is reference made to it in the monthly CPI release and the annual publication?
 - What is the geographical coverage of the price collection survey? Does price collection cover, for example, the largest urban area or areas; selected or all urban areas; or the whole country? Is the coverage clearly indicated in the monthly and annual publications?
 - What is the base year of the CPI weights? Is it more than five years ago?

⁽⁴⁹⁾ The EU legal maximum period for the HICP is 30 days; actual publication is much quicker. The EU example is the only publication period explicitly mentioned in the 'Consumer price index manual' (Chapter 12, Organization and Management, paragraph 12.66).

- What are the weights for the main components of the CPI and for the sub-components? Are these published in the monthly CPI release and/or the annual publication? When were the weights last updated? Are the weights based on a household expenditure survey or similar exercise?
3. A more detailed analysis looks at information that should be available from the methodological document. Failing this, the information should be forthcoming direct from the NSI or other organisation responsible for publishing the price statistics:
 - What legal texts and administrative regulations cover the CPI?
 - What classification is used for the basket of goods and services? Is it COICOP – version 1999 or earlier?
 - Was the source for the weights a household budget survey or other data?
 - What formulae are used for aggregating the price indices?
 - Are all types of sales outlets covered by the price survey? Are they selected randomly within each sales outlet type or purposively? How is the geographical sample constructed?
 - Are there clear rules for replacing seasonal or discontinued goods and for treating quality improvement?
 - Are second hand goods, house rentals and house ownership costs covered by the survey where these are important?
 - What documentation exists that covers data collection, transmission, error correction, data entering/saving and validation procedures?
 - Is the index compilation software used fully documented, especially for the validation procedures and the aggregation formulae?

V3.3.4.2 THE PRODUCER PRICE INDEX

This section should be read together with the corresponding section from the business statistics chapter, section V3.1.4.

1. The basic analysis of the Producer Price Index is similar to that presented above for the Consumer Price Index.
2. Taking a first look at the coverage and the relevance of the PPI immediately requires a look at the business survey cycle:
 - Are there methodological or 'sources and methods' documents that are available for the business survey and for the PPI?
 - What is the base year of the PPI? Is it more than five years ago?

- What is the source of the weights for the components of the PPI? Was the source a business census? Was this business census carried out in the base year or earlier?
 - What classification is used for the PPI basket of goods and services? Is it CPC version 2, ISIC Revision 4 or another nomenclature?
3. A more detailed analysis inevitably examines the quality of the business survey. Most lower and lower-middle income developing countries have particular difficulties with these surveys. As with the CPI, the information needed should be available from the methodological document. Failing this, the information should be forthcoming direct from the NSI or other organisation responsible for publishing the price statistics:
- How are businesses / establishments organised into strata for business surveys? Does this reflect the structure of establishments / businesses in the country?
 - How is the business register kept up to date in between business censuses? Are the means of updating the register exhaustive or nearly so?
 - How many businesses / establishments are currently on the register in each stratum? Is this a reasonable number?
 - How are businesses sampled in each survey? Is the sample a random stratified one? Can previously sampled businesses be reselected, other than in the largest business stratum? Is the sample size realistic for surveys? How long are the questionnaires? Is the burden of response reasonable?
 - What is the response rate? What means, including sanctions, exist to ensure response?
 - How are small and informal establishments surveyed?
4. Survey processing and price index questions also need to be considered for the PPI:
- What legal texts and administrative regulations cover the PPI?
 - What formulae are used to aggregate the price indices?
 - Are there clear rules for replacing seasonal or discontinued goods and for treating quality improvement?
 - What documentation exists that covers data collection, transmission, error correction, data capture and validation procedures?
 - Is the index compilation software used fully documented, especially for the validation procedures and the aggregation formulae?

V3.3.4.3 IMPORT AND EXPORT PRICES

Import and export unit value indices are calculated in some countries by using international trade value and volume data. Before calculating unit value indices, the basic data should be validated to eliminate outliers and errors. The methodology should be documented.

If any price indices have been established in developing countries that measure import and export prices through the business survey cycle, then the analysis for PPIs should be used here.

V3.3.4.4 PRICES IN THE NATIONAL ACCOUNTS

Price data are incorporated in national accounts if they are considered to be reliable. Therefore, the exclusion of any price data as a national accounts data source should prompt questions about reliability or, alternatively, coordination.

The most likely price data to be omitted from national accounts is the PPI, which many developing countries substitute with the CPI. In low income countries with no investment goods industry, capital goods prices data can be drawn from import prices, except for construction. The replacement of import and export prices by the CPI would lead to a considerable distortion.

V3.3.4.5 PURCHASING POWER PARITIES

The quality of the data for purchasing power parities in developing countries is a function of how the International Comparison Programme (ICP- see section 3.3.2.7 above) has been implemented in the country and region in question. The most effective way to collect PPPs is by integrating the process with the regular CPI exercise. This method is only undertaken by the Eurostat-OECD PPP Programme. Elsewhere, information on data quality must be drawn from ICP working papers.

Data quality will be higher with more frequent data collection, which should preferably be at least quarterly throughout the reference year. The products covered should represent most or all of the (2-digit COICOP) product groups. There should also be multiple goods or services measured in each of the product groups. A precise product or service specification is also an indicator that price measurement can be carried out effectively.

V3.3.5. Improving sector statistics

An analysis can quickly identify the problem areas for price statistics compilation, processing and dissemination. Support is usually only requested when there is a need to update the goods and services basket and rebase the series.

Issues that may need to be addressed include:

- Are price statistics a priority? Has their modernisation been identified by an NSDS?
- Will updating lead to greater coverage and hence higher recurring costs?
- Do the surveys, logistics, processing, error correction and validation processes and the compilation software need to be updated?
- Do coordination issues exist with the household expenditure survey for CPI and the business survey unit for the PPI?
- Are there any capacity issues that need addressing, such as training or recruiting new skilled staff?

Box V3.3.3: Example – Improvement of price statistics in South Africa

Statistics South Africa thoroughly revised its CPI in 2009. The changes are extensively documented for statisticians and non-technical users.

The previous basket of goods and services had been used since 2002. CPI renewal started in 2005, when price collection by statistical officers physically visiting the points of sale replaced information provided by the stores (see also section V3.3.2.2). Prices of additional goods and services were collected as a result of this change.

An Income and Expenditure Survey was conducted in 2005/06 over a twelve month period, using a diary questionnaire to record household expenditure. Survey results were published in 2008.

A Statistics South Africa CPI revision web page was used to inform the public about the changes, to obtain feedback and provide transparency. Documents were provided on the website, for example, to ensure contract continuity from old to new measures of inflation.

A draft of the new basket of goods and services was published on the website in September 2007. The basket is based on the COICOP classification (see section V3.3.2.2). The weights for the new basket were published in July 2008.

Coverage is now 'all urban areas', as opposed to the previous coverage of 'historical metropolitan and other urban areas'.

Price collection on both new and old baskets was continued throughout 2008.

Methodological changes included the replacement of the interest rate on mortgage bonds by 'Owners' equivalent rent' as the indicator of housing costs, together with actual rents. 'Owners' equivalent rent' is collected during the quarterly rental survey.

The Ministry of Finance responded to the changes by adopting the CPI for all urban areas as its inflation target. The new index was released in February 2009 and is now used for the year on year rates of change in the CPI.

Source: Statistics South Africa: Consumer Price Index (CPI)

Box V3.3.4: Consumer price index software

Calculating a CPI is complicated. A database application is needed to calculate the indices. Some developing countries still use spreadsheets.

Current database tools are more flexible and, especially those based on the industry standard SQL, are likely to remain accessible. Many developing countries, especially middle income countries, therefore prefer to update their CPI compilation software with an application tailored to their specific needs. Alternatively, a number of CPI compilation packages are now available.

PIPS

One of these is [Price Index Processor Software \(PIPS\)](#), developed by the IMF but available from UNECE. This is based on the [Consumer Price Index Manual: Theory and Practice \(2004\)](#) and the [COICOP classification](#). PIPS calculates indices as weighted averages of the price changes for a specified basket of consumer products. The application consists of five parts: (1) Data Entry, Editing; (2) Data Diagnosis and Validation; (3) Item Weights Creating, Editing and Distribution; (4) Index Imputation; and (5) Tabulation and Reporting. The application offers alternative formulae for calculating price averages. It can use SQL or Microsoft Access databases.

Phoenix

Phoenix is a software package that has been developed by Afristat at the request of UEMOA and its Member States with the objective of replacing the CHAPO (Calcul Harmonisé des Prix par Ordinateur) software. It is intended to be an implementation of the paper «Guide méthodologique de l'Indice Harmonisé des Prix à la Consommation dans l'Espace UEMOA» but also applicable elsewhere, notably in the CEMAC zone, as well as for national CPIs. It is conceived to produce a stable zonal HICP. Phoenix allows for detailed definitions of the consumption classification structure, outlet identification, data collection questionnaires and management of the data collection schedule. Geographic classifications are specified at four levels. Data quality indicators are to be included at national level and below. A dissemination module is intended to produce configurable semi-automated reports. The application supports multiple languages.

IPC

Statistics Portugal has developed a software application for production of CPI in Portuguese-speaking countries. This application, IPC (Índice de Preços no Consumidor), has been successfully installed in Mozambique and Cap Verde. The IPC software draws on experiences from EU harmonization, with some adaptations to the specific environment of developing countries. Among others, the software covers organisation of field work, data editing, validation, estimation, quality adjustment, computation of special aggregates (core inflation, CPI for services, for goods, etc.). The software allows graphic analysis according to the COICOP classification and export of all results to Excel. It also provides functionalities for automatic production of press releases. More details are available from Statistics Portugal.

To find out more...

Recent and current initiatives and activities

- [International Comparison Program](#)
- [COMESA Harmonised Consumer Price Indices](#)

Consumer Price Index (CPI)

- Inter-Secretariat Working Group on Price Statistics (IWGPS): [Consumer price index manual: Theory and practice \(2004\)](#)
- [Classification of Individual Consumption by Purpose \(COICOP, 1999 version\)](#)
- [COICOP / Harmonised Index of Consumer Prices](#)
- Eurostat: ['Harmonized Indices of Consumer Prices \(HICPs\) - A Short Guide for Users'](#)

Producer Price Index (PPI)

- IMF: [Producer Price Index Manual: Theory and Practice](#)
- [Central Product Classification \(CPC\) version 2](#)

Import and Export Prices

- IMF: [Export and Import Price Index Manual: Theory and Practice](#)

Purchasing Power Parities (PPPs)

- Eurostat and OECD: [Methodological manual on purchasing power parities \(PPPs\)](#)

Data sources

- CPI data is often available from National Statistical Institute websites.
- IMF: [International Financial Statistics](#)
- OECD: [Prices and Purchasing Power Parities \(PPP\)](#)
- Eurostat: [EUROBASE](#) database, [Metadata](#) and [RAMON metadata server](#)

V3.4

International trade in goods



V3.4. International trade in goods

The chapter in brief

This chapter covers statistics that inform the European Union's 'Trade and Regional Integration' policy areas as defined in the European Consensus (see section B.1.4.1).

This chapter covers a wide area of external trade and balance of payments statistics. The chapter starts by identifying the main policy areas for which these statistics are used and continues by providing a user's view of the statistics involved, including a description of the differences between external trade and balance of payments statistics. The chapter then identifies the main sources of data and information about methods, continues by discussing how to analyse the quality of the statistics in this field and concludes with information about how to support an intervention in trade statistics

- Monitoring medium-term macroeconomic policy: trade volumes and price levels (import and export price indices) are used in the national accounts, which is the main instrument for observing the economy as a whole. The contribution to growth of net exports is a key policy indicator.
- Importers and exporters use international trade statistics to identify and quantify markets, often needing statistics on very precisely detailed products.

V3.4.1. Policy applications: what this data is used for

External trade and balance of payments statistics have a wide variety of uses, including:

- Providing timely information about trade sectors, both goods and services, in which governments have a keen interest, such as main export products.
- Supporting trade policy, including trade negotiations, monitoring trade agreements and resolving trade disputes. This is a major driving force for improving external trade data in developing countries. Within the European Union, external trade data are also used for multilateral and bilateral negotiations within the common commercial policy, for definition and implementation of the anti-dumping policy and for evaluating the progress of the Single Market.
- Monitoring financial stability and monetary policy: the balance of payments measures the external deficit / surplus with the rest of the world and from this is calculated net external debt, the size and composition of which are closely observed by the monetary authorities (usually central banks). If the external deficit is linked to a government sector deficit, then fiscal policy – taxes and government expenditure – can be also affected by these measures.
- Short term economic monitoring: trade and payments ⁽³³⁾ statistics are published frequently (usually monthly for trade, quarterly for payments) and are timely indicators of a country's economic activity (other such indicators include CPI, financial statistics and output data). For example, since increased economic activity usually results in an increase in imports, an observed change in imports (or in payments for imported goods) from its trend rate of growth can be an early indicator that overall economic growth has deviated from its recent path.

⁽³³⁾ Statistics on cross-border transactions recorded in the balance of payments

V3.4.2. Concepts and definitions

The statistics covered in this section are defined by section 2.6 'International trade and balance of payments' of the new UNECE Classification of International Statistics Activities, which was introduced in section B.4.3. This area is defined as covering statistics on all cross-border transactions recorded in the balance of payments and includes

- trade in goods and services
- external positions and debt
- foreign direct investment
- foreign affiliated trade
- tariffs, market access, foreign aid, development assistance and resource flows to developing countries.

This chapter deals with the general aspects of the above, and does not go into details regarding specific groups of products.

- Details on specific commodities/services can be found in the respective chapters of this **Guide**, such as chapter V3.6 Transport statistics and chapter V4.3 Agricultural, forestry and fishing statistics, etc.
- Exchanges between multinational companies and activities of foreign affiliates.

External trade in goods statistics are based on physical flows of goods across borders, while trade in services covers the provision of services by residents of a country to non-residents and vice versa.

Other commonly used names for external trade statistics are international trade statistics, merchandise trade statistics (goods), foreign trade statistics or simply trade statistics. When using any such figures, care should be taken as to whether they include or exclude trade in services, as these terms are sometimes used to include only trade in goods transactions.

External trade in goods statistics have historically been collected through **customs administrations**, who primarily record imports and exports for collection of duties. Statisticians take advantage of this source, often supplementing customs data with information obtained from other sources to provide full coverage of external trade. Publication of good quality trade statistics therefore depends on effective coordination with the customs administration.

In the European Union, customs records do not cover trade in goods between member states, because transactions within the EU customs union are no longer subject to tariffs or customs surveillance. Other sources need to be used, such as a data collection system based on monthly reporting by enterprises. Box V3.4.1 outlines the method used by Eurostat to collect data on trade with non-EU countries and within the EU.

Box V3.4.1: Eurostat's trade statistics system

Extra-EU trade statistics data are collected by using a copy of the customs declaration, which traders provide in fulfilling their reporting obligations to the Customs authorities. The statistical information depends, therefore, very much on customs practices, definitions and policies, with only a few details being collected purely for statistical purposes. Making use of existing customs procedures means that there is nearly total coverage of data on trade with non-EU countries.

As a result of the abolition of customs control at the borders between the Member States, intra-EU trade statistics are collected directly from traders. The reporting burdens are simpler, compared with the extra-EU system, and private individuals and small scale traders are excluded. However, any natural or legal person registered for VAT in a Member State who carries out intra-Community trade above a certain threshold is obliged to report monthly on its intra-Community trade to the national statistical authorities. The national authorities use data from the fiscal authorities to identify the target population and maintain registers on trade operators.

External trade statistics are intended to provide full coverage, therefore in principle the following transactions should be included: trade unrecorded by customs (such as trade in electricity and products transported by pipeline such as gas and petroleum), barter trade, goods on consignment, goods on financial lease, goods traded between enterprises under common ownership, goods traded on government account, processing and repair trade. Enterprise surveys are generally used as a means of collecting data on these headings.

Trade in services is more difficult and more complex to measure than trade in goods, dealing as it does with payments made for services provided by residents of one country to residents of another, regardless of where the transactions take place. Historically, many countries have estimated their external trade in services totals by using bank settlement data, which shows the value of payments made in non-national currencies. Surveys of enterprises or individuals are generally needed to break these totals down into the product headings of trade in services.

The required indicators for trade statistics are as follows:

- trade flow (exports, imports, re-exports, re-imports)
- trade partner (i.e. country)
- trade value (monetary terms)
- trade product
- trade quantity in kg (goods)
- trade quantity in supplementary units (goods)

The trade quantity is important because this enables the calculation of export and import unit values which are used for national accounts and are themselves useful short-term macroeconomic indicators.

The current account of the **balance of payments statistics** measures all current payments between a country and the rest of the world, including payments for trade in goods and services (the balance of trade ⁽³⁴⁾); factor payments: income from capital and remittances by workers abroad; as well as international transfers. The capital account covers transactions in investment assets.

The current account of the balance of payments therefore covers a considerably wider range of transactions than the external trade data. The balance of trade covers broadly the same transactions as the external trade data, although the different concepts used (for example, change in ownership of goods as against physical flows) mean that, unadjusted, there is no reason for the two data series to match precisely. Since the differences mostly concern the timing of transactions, the balance of trade in goods and the external trade data should be consistent over time, so that data for longer periods should be comparable.

In many countries balance of payments data is sourced from international bank transfer documentation, which is usually completed by remitters of funds, and collected by monetary authorities, usually central banks. Additional information can be obtained through value added tax collection systems. Other records of monetary authorities are also used, such as in the case of imports and exports of gold.

Even developed countries experience difficulties in compiling merchandise trade statistics. As discussed in the OECD Statistics Brief ⁽³⁵⁾, 'a number of measurement issues and comparability problems remain. In particular the increasingly important phenomenon of globalisation, entailing the internationalisation of production and sales and new forms of delivering goods and services to customers across countries, new developments in information and communications technologies and the growing importance of e-commerce requires new approaches and poses new methodological challenges.' With increasing globalisation, exchanges between **foreign affiliates** and their parent companies are often made at prices which are not market prices.

⁽³⁴⁾ Monetary value of exports minus imports of goods and services

⁽³⁵⁾ [Trade in Goods and Services: Statistical Trends and Measurement Challenges](#) (October 2001)

A specific collection of statistics, Foreign Affiliate Trade Statistics (FATS) has been set up to cope with this problem. Compilation of these statistics is likely to be difficult for many developing countries.

Describing traded goods and services necessitates a classification. In external trade in goods statistics the recommended classification is the 2007 (latest) version of the Harmonised Commodity Description and Coding System (Harmonized System, HS) which is based on the nature of the commodity. Earlier versions of the Harmonised System (88, 92, 96, 2002) are still used by some countries. The EU's Combined Nomenclature (CN) is a more detailed version of the HS. An alternative classification is the Standard International Trade Classification, which is based on stages of production and is therefore more suitable for some economic analyses. The current version is revision 4 (SITC, Rev. 4), which was accepted in 2006, though the previous revision is still in widespread use. The Broad Economic Classification (BEC) is based on the SITC and is available for economic analysis. Its top-level classification is as follows:

1. Food and beverages
2. Industrial supplies not elsewhere specified
3. Fuels and lubricants
4. Capital goods (except transport equipment), and parts and accessories thereof
5. Transport equipment and parts and accessories thereof
6. Consumer goods not elsewhere specified
7. Goods not elsewhere specified

Trade in services is broken down into eleven product headings:

- Transportation (sea, air and other) – passenger, freight and other
- Travel - business and personal
- Communications services
- Construction services
- Insurance services
- Financial services
- Computer and information services
- Royalties and licence fees
- Other business services - merchanting and other trade-related services; operational leasing services; miscellaneous business, professional and technical services
- Personal, cultural and recreational services - audio-visual and related services; other cultural and recreational services
- Government services

V3.4.3. Sources of data and metadata

External trade data are published at national, regional or global levels. National data sources cover the trade of a country with its trading partners and are usually published by the NSI or the customs or revenue authorities if they collect the data, while in some countries the Ministry of Trade publishes the data. Regional organisations which manage a free trade area or customs union usually publish data on trade within the region as well as on the region's external trade with non-member countries. In the European Union, for example, the primary data source for external trade data is Eurostat, rather than the Member States.

Global organisations publish data on trade between all possible pairs of countries. Global trade databases are very large, for example, the [United Nations Commodity Trade Statistics \(COMTRADE\) Database](#) contains more than one billion trade records. In addition, commercial trade databases exist that seek to add value to the data. In developing regions, non-government databases (non-profit or commercial) can provide data that is not available from government or regional organisations' websites. The COMTRADE database disseminates detailed annual data for trade in goods in the Harmonised System (HS – explained above) at 6-digit level and in other classifications on the required indicators. In addition, the database provides the following indicators at commodity group level:

- gross and seasonally adjusted trade value (in national currency or in USD),
- unit-value indices,
- volume indices,
- growth rates of trade values and indices,
- trade value (in billion Euro),
- shares of a country in world trade,
- main trading partners,
- balance of external trade

A selection of links to global, regional and national trade databases is shown in the box 'To find out more' below.

Some databases, for example COMTRADE, provide data according to HS, SITC and sometimes BEC classifications. Correspondence tables can also be used to convert from one classification system to another or to update from an old revision to a current version of a classification system. United Nations and Eurostat sources of correspondence tables are shown in the box 'To find out more' below.

The IMF provides the most comprehensive global database of [balance of payments statistics](#) ⁽²⁶⁾. Other data sources are central banks, the European Central bank being responsible for publication of Eurozone data.

⁽²⁶⁾ The IMF balance of payments database requires subscription

The United Nations is the repository of most methodological manuals for trade in goods and services. The IMF is the responsible authority for definitions in the balance of payments. The UN [International Merchandise Trade Statistics: Concepts and Definitions](#) (IMTS, Rev.2; there is a Rev 3 under development) contains international standard definitions and methodological recommendations. The companion document, the [International Merchandise Trade Statistics Compilers Manual](#) discusses in detail the conceptual and institutional framework of data collection, the sources of data, methods of data compilation, and data dissemination, reconciliation and exchange. Metadata on international merchandise trade statistics, including at country level, can also be obtained from the [United Nations' Commodity Trade Statistics \(COMTRADE\) Database](#). The [Manual on Statistics of International Trade in Services](#) provides international standard recommendations on methodology as well as classification of services delivered through trade and recommended treatment of the local delivery of services through foreign affiliate trade. An overview of country treatments of statistics on trade in goods and services and on the balance of payments is given in the [IMF GDDS / SDDS country pages](#).

The [Eurostat database](#) provides access to the EU's external trade statistics and metadata. It also provides balance of payments statistics for non-EU countries, from international sources: some of this information is only accessible by European Commission's agents (see section B.3.4)

V3.4.4. Analysing data quality and identifying problems

The quality of external trade statistics depends on the data coverage, how quickly statistics are published, their compliance with international recommendations, especially classifications, and the availability of indices based on the data.

The recommendation on the coverage of external trade in goods statistics (IMTS Rev 2, paragraphs 64-68, on which much of this paragraph is based) is the 'general trade system', which most countries follow. The general trade system is in use when the statistical territory of a country coincides with its economic territory, but a few countries still use the special trade system, which is in use when the statistical territory comprises only a part of the economic territory, for example when an export processing zone is excluded from reporting trade statistics. The trade system or 'trade regime' can be verified from the IMF GDDS / SDDS web pages (see section B.2.4), which shows, for example, [Egypt](#), as using the special trade system ⁽³⁷⁾.

Other issues of availability of statistics and their conformity to international conventions can be analysed relatively easily. A major issue is whether the published data conforms to a recent trade classification (or nomenclature) system, such as the Harmonised System, as outlined above. Publications should cover all trade, not simply a 'top twenty' list of exported and imported products. Data sources should cover all trade transactions. A review of the data published on-line by Senegal (see link in the 'To find out more' box below) is instructive - because data is collected through Customs procedures, data on imports, which are subject to customs scrutiny, are often more complete than export data, which are not. Export data for primary products should therefore be compared with any available production data. Many developing countries often have difficulty in systematically collecting data on quantities (weights or 'supplementary units'), as these are not required for import tariffs. Their availability in detailed statistics publications should therefore be checked.

External trade transactions can be omitted or incorrectly recorded in the statistics. One way to identify these problems is to look at **asymmetries** in the statistics between those of a country (or trading group) and its trade partners; a country's export statistics rarely match the corresponding import data of the partner country ⁽³⁸⁾. A country's or trading group's trade with the EU can be examined through a '**reconciliation**' or 'mirror' study. Such a mirror study aims to identify the main discrepancies between the two sets of data and why they come about. It should also propose measures to reduce or eliminate these problems. An example of 'Terms of reference' for such a mirror study is shown in Box V3.4.2. This example is based on those which were used in comparison of trade statistics between EU and [COMESA](#) and among COMESA Member States.

⁽³⁷⁾ as of November 2008

⁽³⁸⁾ Even after freight and insurance costs have been allowed for – exports are usually evaluated fob (free on board) and imports as including cif (cost, insurance and freight).

Box V3.4.2: Example terms of reference for a trade reconciliation study

In theory, a country's recorded exports are the mirror image of its trading partners' recorded imports. In practice, there are often discrepancies between the two. External trade statistics reconciliation studies are a systematic process of identifying and assessing the causes of disparities in trade flows published by two countries or regions. To achieve this, an initial analysis of concepts and definitions used is undertaken.

The short term objective of a reconciliation exercise is to explain and assess the causes of discrepancies in trade statistics and hence obtain mutually agreed datasets of better quality. Longer-term objectives may include harmonising the conceptual framework of two sets of statistics, which could lead to the use of new procedures in trade data compilation.

Structure of Assignment

- The lead consultant will have undertaken a previous reconciliation study.
- A selected number of country statisticians based at COMESA country statistical offices and customs authorities will act as national study team members. The aim is to build capacity among COMESA trade statisticians in reconciliation exercises.
- The lead consultant will explain the methodology to selected COMESA Member State statisticians and analyse the 2005 data provided by the Member States to COMESA. A review of the results will be undertaken by the country statisticians.
- The team leader will provide guidance to the country statisticians on the methodological aspects as well as the proposed adjustments to the 2005 dataset.

Roles of Team Members

- The lead consultant will define the work plan for the second phase of the reconciliation between EU data and selected COMESA Member States' data. All data will be shared with the national statisticians in the selected COMESA Member States for further analysis.
- COMESA Member State Statisticians will act as team members for data related to his/her specific country. Issues raised by the lead consultant pertaining to specific country data will be dealt with by him/her. If any methodological aspects described by lead consultant have not been fully explained to a Member State statistician to his/her satisfaction, the statistician must indicate this to the lead consultant and to the COMESA Secretariat.
- The COMESA Secretariat will coordinate between the lead consultant and Member State team members and will review the report.
- EUROSTAT will play an advisory role including review of final report.

Activities

- Review the mirror statistics study previously undertaken for COMESA.
- Undertake an EU-COMESA mirror statistics study for 2005 data.
- Compare findings of earlier study that used pre-2005 data with results based on 2005 data.
- Review 2005 results by COMESA Member State statisticians, COMESA Secretariat, Eurostat.
- Design of reconciliation format with clearly defined methodology and structure for analysis.
- Analyse discrepancies found by the lead consultant supported by national consultants.
- Finalise report making concrete recommendations for areas of improvement.
- Present report by national consultants at stakeholder workshop dealing with the trade negotiations and trade policy analysis.

The starting point is a top down examination of trade data for credibility, with the aim of identifying inconsistencies in recent data, especially data changes from year to year that are difficult to explain. The output is a list of sectors and / or trading partners where there are questions about the quality of the data. The procedure should then be repeated at increasingly greater levels of data disaggregation. Graphing the main changes can help to identify problems such as time period recording errors or errors in which goods are recorded as switching between different classifications.

Quality information can be found for most countries for both [external trade](#) and [balance of payments statistics](#) on the website of the IMF General Data Dissemination System (GDDS – see section B.2.4.1.3.). The countries that subscribe to the IMF's Special Data Dissemination Standard (SDDS – also see section B.2.4.1.3.) additionally have IMF reports that show how the country meets the main quality aspects of [external trade data](#) and [balance of payments statistics](#). However, few low income countries subscribe to SDDS. International data quality standards are available from the IMF's Data Quality Assessment Framework (DQAF, introduced in section C.5.3)

website and related pages. DQAF specific quality rules cover balance of payments statistics. General DQAF rules apply to the external trade statistics. Links are shown below in the 'To find out more' box.

Eurostat publishes an annual [Quality Report on International Trade Statistics](#) which provides a detailed analysis of the quality of EU Member States statistics in this field. In general the most significant sources of errors when compiling foreign trade statistics are the following:

- undocumented shipments,
- transiting goods,
- underestimation of low-valued transactions,
- late filing,
- reporting errors,
- data capture errors.

A quality based assessment of trade statistics starts with analysis of the data quality as above but must have the broader coverage of [DQAF](#) or another assessment framework. In particular, the institutional framework needs close attention: is the responsibility for collecting, processing, and disseminating the statistics clearly specified at every stage in the process?

Data collection and transmission issues also need to be addressed in the assessment. These include, for example, statistical returns from remote customs posts and the potential for their estimation, unrecorded trade from porous borders and/or mis-recording of customs declarations arising from lack of knowledge or corruption.

An NSI's capacity to analyse the data; their IT systems, staff issues and the means of dissemination of the resulting statistics must also be covered by the assessment. For more information on improving the capacity of statistical systems and NSIs, see chapter C.6.2.

V3.4.5. Improving sector statistics

This subsection focuses on statistical actions to improve external trade statistics. The objective of any intervention in external trade statistics is to ensure comparable, accurate, complete and timely published data. The assistance provided has to address all the appropriate points in the chain of data collection and processing from customs point, or collection of survey data, to publication of statistics.

Typically, more than one institution is involved in the production of trade in goods statistics, generally customs and statistics authorities, who may not have much experience of working together. As typical issues include the incorrect completion of customs declarations where there is no customs interest (for example, recording of exports and of quantities (weights or 'supplementary units'), customs / revenue authorities need to be involved throughout the planning and implementation of any intervention. Effective coordination between customs authorities and the NSI is required on:

- data sharing (including the legal framework),
- ensuring that the customs declaration forms take statistical needs into account
- IT and communications systems
- supervision of the actions of customs officers and their training and
- data analysis.

A formal service-level agreement or memorandum of understanding between the organisations involved is often necessary to align the interests of the two services. Possible implementation actions include the training of customs officers as well as freight forwarders responsible for completing customs declarations.

External trade statistics interventions are generally developed as regional projects, where they may play a part in support of regional integration, such as regional trade agreements. A regional economic community is therefore often designated as the focal point, responsible at a minimum for compiling and publishing comparable regional trade statistics. This initial responsibility can increase to cover training in the software used and in trade statistics generally and the provision of technical assistance to its members, notably in installing and maintaining the software. The publication of regional trade statistics on-line by the regional economic community requires a statistical database and leads directly to on-line publication of other regional economic statistics. This process can be seen in operation in, for example, [COMESA](#) in eastern and southern Africa.

Computer systems for customs processing and trade statistics compilation are an important part of customs and trade statistics projects, a number of alternative systems being available for both processes. Two issues are particularly important: system compatibility and the linkage of systems with specific sources of advice. European Commission support is not limited to any specific software.

One widely used customs processing software is [ASYCUDA](#), the current version of which is 'AsycudaWorld', a system initiated and supported by UNCTAD, though some developing countries choose other customs software and sources of technical expertise. The decision is often linked to the systems used by main trading partners.

A software package for external trade statistics compilation in developing countries is [Eurotrace](#), developed by Eurostat. Eurotrace has already been installed and will be used in around 50 countries in the Western Balkans, in Western, Southern and Eastern Africa and in the Caribbean. Eurotrace's functions are:

- to import, validate and manage the data necessary for the development of external trade statistics, in particular customs data (from ASYCUDA or other customs systems);
- to process this data, by carrying out quality controls and ensuring international standards are complied with;
- to define and load data to aggregated datasets ready for dissemination.

The priority currently being discussed (June 2009) is to support the gradual migration of the Eurotrace application towards Open Source Software (OSS). This move is likely to be linked to an increased role for the user group, which is expected to play a major role in setting future strategy. Eurostat is currently responsible for maintenance and development of Eurotrace, although this may also be handed over to the user group. Further information on [Eurotrace can be found on the Circa website](#). Registration is required for participation in the user group.

Box V3.4.3 shows an indicative standard set of terms of reference for installing Eurotrace and providing relevant training. The coverage of the customs authorities should be emphasised. Box V3.4.4 summarises the external trade statistics and Eurotrace training programmes provided by Eurostat for regional economic communities and their member states. Further training is provided on a regional basis.

It should be re-emphasised that any interventions should be seen as external trade statistics projects and not as software installation projects. Publication of quality statistics is the output.

Box V3.4.3: Case study: Terms of reference for installing the Eurotrace software and providing relevant training

General description of statistical functions:

Eurotrace is a software suite consisting of products which may operate in isolation or independently of each other. It is distributed free of charge by Eurostat as part of statistical cooperation with third countries. Eurotrace and Comext Stand alone both use Microsoft Visual Studio products (Visual Basic and Visual C++), the API standards and Microsoft's object-orientated technologies.

The package comprises the following:

- DBMS: tools for defining, incorporating, validating and managing all types of external trade databases which use customs data (or other sources of information);
- Editor: tool for gathering, modifying and validating all types of data "on the fly". Mainly used for processing customs entries;
- COMEXT: multidimensional data browser which incorporates advanced functions, such as calculation of aggregates, definition of complex formulae and a variety of export formats.

Mission No 1

This mission is optional and may be replaced by a standard questionnaire.

Objective: Define the stages of product installation and assess equipment and training required.

- Day 1: make product presentation to the team that compiles external trade statistics
- Day 2/3: Check the sources and nomenclatures normally used by the external trade statistics team; check the equipment available and identify any requirements.
- Day 4: Contact Customs and any other providers of data on external trade.
- Day 5: Draw up the work schedule for software installation together with the national team; produce a preliminary report.

Results and products to be provided:

- Mission report;
- Standard pre-installation questionnaire.

Mission No 2

Objective: provide training for users and obtain a complete listing of tasks which can be used to produce validated data on external trade.

Week 1: installing and defining the database together with:

- Statistics team leader. The aim is to validate the procedures and resulting data;
- Computer specialist responsible for the databases. The aim is to validate the information structure and how the software administration is distributed;
- tailoring the pre-prepared domain to the country's requirements and installation: 3 days;
- training course for administrators: 2 days / max. 4 people: using the validated task list.

Week 2: training

- Training course for designers: 2 days / max. 4 people: creating and implementing the processing procedure (domain, dictionary, data set, validation, derivation, etc.). The training course outlines the parameterisation of Eurotrace in line with the practical requirements of users, based on their computing and database knowledge;
- Training course for users: 3 days / max. 10 people: normal use of the software (editing of data, importing, exporting, browser).

Results and products to be provided:

- Standard report (installation checklist);
- Specific work programme with a view to preparing the final mission.

Mission No 3

Objective: to check that the software installed works properly by providing any additional support required and to finalise initial data set on Comext Stand alone (development of a CD).

- Day 1: check Eurotrace operation and assess user knowledge of software in order to give advice where needed or identify a need for further training;

- Day 2: assess how Eurotrace is used by examining the data quantity transferred, the sources of requests for data and the type and number of requests sent to the statistics unit;
- Day 3: assess the quality of data and, where necessary, encourage local managers to carry out more rigorous quality assessments;
- Days 4 and 5: help the departments to develop a Comext CD.

Results and products to be provided:

- Standard report on completion of the installation;
- Comext CD focusing on the year for which the latest data is available.

Software and hardware (minimum) configuration

- Windows XP (incl. server); MS Office PRO; virus check, compression, archiving, etc.

One server / one to four workstations, each with:

- 1GHz processor; 512MB RAM; 160GB hard disk; DVD RW; Internet (ADSL if required)
- Network ARJ45+Hub required, uninterruptible power supply, air conditioning (if essential)

What users must know

- Knowledge of the Windows and MS Office environment

Statistical team:

- Knowledge of how to produce external trade statistics on the basis of customs data
- Knowledge of all the specific methods used when processing data in the country
- Ability to select implementation method based on cost, efficiency and quality criteria.

IT team:

- Knowledge of the database (theoretical knowledge, at least)
- Knowledge of MS Access is an advantage
- Knowledge of SQL (on any DBMS) for the designer part.

Profile of experts for missions

- Knowledge of French and/or English.
- Experience in statistical cooperation with ACP, ALA or MED countries is strongly desired.
- Experience in presenting training seminars, theoretical or practical courses is an advantage

The statistics expert(s) should have a degree in economics, statistics, econometrics or a related subject. The experience required is:

- A minimum of 5 years work experience in public statistics.
- At least 2 years experience in the field of external trade statistics.
- Knowledge of information systems for compiling data on external trade: Eurostat Users Guide, International Merchandise Trade Statistics: UN Concepts and Definitions.

The Computer expert(s) should have a degree in computer studies. The experience required is:

- Experience of installing and defining the Eurotrace domain and of on-site training.
- Knowledge of managing Windows and networks for on-site parameterisation.
- Perfect knowledge of the Eurotrace Windows software and of systems for managing databases of statistics on external trade.

Documentation and training for installers

- Training manual for users; Training manual for trainers
- User guide; Methodological manual; Technical documentation
- Standard training

Box V3.4.4: European Commission training in external trade statistics and in the Eurotrace software

Training courses in international concepts and in the Eurotrace software were set up by Eurostat. The specific objectives of such short training courses are to:

- provide a basic understanding of the data collection procedures and of the processing of external trade statistics;
- train trade statisticians and computer experts from National Statistical Institutes on the use and management (configuration) of the current version of the Eurotrace software;
- enable the effective interpretation of published external trade statistics;
- train participants to be trainers on sources, methods and processing of trade data using the Eurotrace software; and
- discuss the way forward regarding harmonisation of foreign trade statistics within the region.

The courses focused on the following issues:

- purposes and uses of foreign trade statistics;
- merchandise trade – basic concepts and definitions;
- classifications used in foreign trade statistics;
- sources and methods for foreign trade statistics;
- methodology for informal cross-border trade;
- estimation of missing external trade data and adjustment methodologies;
- computer systems for foreign trade statistics;
- quality assurance for foreign trade statistics;
- main outputs for foreign trade statistics;
- dissemination methods for foreign trade statistics; and
- how to train others on sources, methods and use of the Eurotrace software for foreign trade statistics.

To find out more...**Global data sources**

- [United Nations Commodity Trade Statistics \(COMTRADE\) Database](#)
- [IMF Direction of Trade Statistics](#) – database (requires subscription)
- [IMF Balance of Payments Statistics](#) – database (requires subscription)

Selected regional and national data sources for trade statistics

- [Eurostat trade statistics](#) - also a source of metadata
- [European Central Bank](#) - Euro area balance of payments statistics

Africa:

- [COMSTAT](#) - statistical database for the COMESA region
- [Database of SADC trade](#)
- [ECOWAS](#) – see 'Publications' page
- [Senegal](#)

Americas:

- [CARICOM](#)
- [ECLAC / CEPAL](#)
- [US Census Bureau](#)

Asia:

- [ASEAN](#)
- [China Ministry of Commerce](#)
- [IndiaStat](#)
- [Pakistan Federal Bureau of Statistics](#)

Metadata

- [United Nations trade publications page](#) includes:
 - [International Merchandise Trade Statistics: Concepts and Definitions](#) – global recommendations for external trade statistics
 - [Manual on International Trade in Services](#) – this link shows the IMF description
- [IMF Balance of Payments manual](#) (6th edition)
- [IMF GDDS / SDDS web pages](#) – Outlines national trade and payments methodology
- [IMF DQAF webpage](#)

Classifications registries:

- [Eurostat RAMON metadata server](#)
- [UN Classifications registry](#)

Software systems

- [ASYCUDA \(Automated SYSTEM for CUstoms DAta\)](#)
- [Eurotrace](#)

V3.5

Business statistics



V3.5. Business statistics

The chapter in brief

Business statistics is a key input to both the quarterly and the annual national accounts, both in developed and in developing countries. They are also vital for analysing the value created and the employment in the different economic sectors, as well as the development of these sectors. New statistical challenges for business statistics are globalisation (e.g. international sourcing), the growing importance of business services and the focus on innovation and entrepreneurship. Although these issues may not be the priority in the lowest income countries, they are of interest and importance in more advanced developing countries. Business statistics are produced for different type of users, from based on data collected, either directly from the statistical units (enterprises) or from administrative sources (e.g. tax data). The two most central sets of business statistics are the structural business statistics (SBS), used mainly for structural analysis, and short-term business statistics (STS), used mainly for trend analysis. These two sets of statistics are distinct but interrelated.

This chapter covers a wide area of general business statistics, but does not go into statistics for specific sectors such as transport (see chapter V3.6.) or agriculture, forestry and fishing (see chapter V4.3.). The chapter starts by identifying the main policy areas for which business statistics are used. It then provides a users' view of the statistics involved, including a description of the different kind of business statistics (annual versus short-term, enterprise versus establishments, etc). The chapter continues by identifying the main sources where the data and information about methods used can be found. Finally, the chapter discusses how to analyse the quality of the statistics and concludes with advice on and examples of how to improve business statistics in developing countries.

V3.5.1. Policy applications: what this data is used for

Business statistics are in great demand for economic analysis by a large number of users: international organisations, aid donors, national governments and policy-makers, central banks, financial markets and economic analysts, private sector companies, NGOs, media and the citizens of the country. Among other things, there is an increasing need for data on globalisation (e.g. international sourcing), business services and on innovation and entrepreneurship. Even in low income countries, sourcing of production and services from the globally acting enterprises are of growing importance. In more advanced developing countries, data on business services and innovation and entrepreneurship are also in increasing demand for economic analysis and policy formulation. These are some of the most dynamic areas of developed and more advanced developing economies, especially in terms of their potential for growth and employment creation.

- Business statistics describe the economy through the observation of units engaged in an economic activity. Business statistics may be used to answer such questions as: how much wealth and how many jobs are created in a certain economic sector; is there a shift from the primary

to and from the industrial sector to the services sector; in which specific sectors is this trend most notable; which countries are relatively specialised in the manufacture of which raw materials; what is the average wage of an employee within the energy production sector; how productive is the drink production sector and how does it fare in terms of operating profitability?

- Productivity is a key measure of economic efficiency, showing how effectively economic inputs are converted into output; profitability is a key indicator for measuring enterprise success. There are several business statistics indicators that allow an analysis to be made of productivity and profitability.
- Business demography statistics, via demography of the enterprises, allows analysis of the active population of enterprises, their birth, survival and death. Special attention is paid to the impact of these demographic events on employment levels. These data can be used for example to analyse the dynamics and innovation in different markets: for example, entrepreneurship in terms of the propensity to start a new business, or the contribution of newly born enterprises to the creation of jobs.
- **Business services** are a driver of the modern economy. Their labour-intensive nature has also attracted interest in their potential as providers of new jobs. Globalisation and the increasing outsourcing of basic production and business services to low-cost (low wage) developing countries are increasing the need for business statistics. Technological progress and the Internet are also important factors that have provided new production possibilities and new modes of supply.
- Business statistics include many of the key short-term indicators that are vital for analysis of recent and current economic developments and the development of monetary and economic policy, both in the developing countries themselves and in the global context.
- The profile and use of short-term business statistics is expanding rapidly. Information flows have become global, and the latest news release for an indicator may have significant effects on markets or decisions taken by central banks and business leaders. Indicators provided in the form of indices allow rapid assessment of the economic climate within an economy.

V3.5.2. Concepts and definitions

Business statistics cover economic statistics across different sectors, statistics on economic activities of enterprises, business demography, business investment, business services, demand for services, industrial performance, enterprises by size class, industrial production, commodities, structure of sales and services, outputs of the service industries, non-profit institutions, etc.

The core indicators of business statistics are:

- **Outputs:** turnover, production value, value added
- **Inputs:** purchases of goods and services (incl. energy costs), personnel cost
- **Employment:** number of employees and other persons employed, number of worked hours
- **Investments:** gross investments in tangible goods.

The decision of whether business statistics should be prioritised over the development of other statistics critically depends on the situation of the country and on the state of the national statistical system (see chapter C.5.). The priorities should be clearly defined and set within the frame of the national development strategy and the National Strategy for the Development of Statistics (NSDS) or similar (see section C.6.1.).

V3.5.2.1. THE MAIN TYPES OF BUSINESS STATISTICS

V3.5.2.1.1. Structural (annual) business statistics (SBS)

Structural business statistics describe the structure, conduct and performance of economic activities, down to a detailed activity level. In most developing countries, the economic activities are defined according to the UN's [International Standard Industrial Classification of All Economic Activities \(ISIC\)](#) (Rev. 3.1 or 3.0 in most developing countries) or a national adaptation of this. Structural business statistics normally cover the 'business economy', which includes industry, construction and services. In most developing countries, the [non-registered \(or non-observed\) economy](#) plays a large role in the economy and should be addressed.

The purpose of structural business statistics is to analyse:

- The structure and evolution of business enterprises' activities;
- Production factors and other elements influencing business activity, competitiveness and performance;
- The regional, national and international development of businesses and markets;
- Business conduct;
- Small and medium-sized enterprises; and
- Specific characteristics of enterprises related to particular breakdown of activities.

In the EU, a harmonised system of [Structural \(annual\) Business Statistics \(SBS\)](#) has been developed. The SBS methodology is a valuable source of well-defined concepts and definitions, as well as of methodological approaches producing internationally harmonised quality business statistics. Subsets of the European SBS variables are available with a breakdown according to the size of the enterprise ([small and medium-sized enterprises \(SMEs\)](#)) and by region ([regional structural business statistics](#)).

V3.5.2.1.2. Short-term business statistics (STS)

Short-term business statistics include key short-term indicators that are vital for analysis of the current state of the economy and of economic trends. Amongst other, STS is a key information source for monetary and economic policy. Overall, the use of short-term business statistics is increasing rapidly and is widening to new areas of analysis and policy-making. Information flows have become global and the latest news release for an indicator may have significant effects on markets and on decisions taken by central banks, policy-makers and business leaders. Short-term indicators allow the rapid assessment of the economic climate within an economy. As an example, European [Short-term business statistics \(STS\)](#) provides eight of the nineteen [Principal European Economic Indicators \(PEEIs\)](#) (infra-annual macroeconomic indicators for the euro area and the EU).

V3.5.2.1.3. Manufactured products statistics

Worldwide *statistics on manufactured products*, the [Industrial Commodity Statistics](#), are compiled by the United Nations based on national data. The statistics are classified according to the UN's [List of Industrial Products](#), which, as far as possible, is based on the definitions of the [Central Product Classification \(CPC\)](#) and the [Harmonized System \(HS\)](#). An important issue is that *national or regional product classifications should be compatible with international product classifications*, and in particular with the classifications used for trade statistics (e.g. HS, SITC). This makes it possible to combine production data with trade data for analysis of product markets. In the EU, the [Prodcom](#) statistics on products from mining, quarrying and manufacturing activities are based on the [Prodcom product list](#).

V3.5.2.1.4. Other business statistics

The objective of statistics on the structure and activity of foreign affiliates (FATS) is to provide a basis for the assessment of the impact of foreign-controlled enterprises on the national economy. In developing countries, such enterprises can have a large influence on the economy. It is therefore of great interest to analyse the structure and ownership of such enterprises, as well as their activities within the country. A foreign affiliate is defined as an enterprise in a country which is under the control of an 'institutional unit' not resident

in the country. The FATS data also facilitates monitoring the effectiveness of regional common markets and the integration of economies within the context of globalisation. Examples of FATS statistics and the methodologies applied can be found in the [EU foreign controlled enterprises \(FATS\) statistics](#).

A globalisation trend that has received a great deal of political and media attention is the increase in outsourcing of production and services from developed countries to low-cost developing countries. This is closely related with the industrial restructuring which has been one of the main economic developments in Europe and other developed countries in recent decades. This is seen both in the context of deindustrialisation and concerns regarding social and environmental standards. Statistics on international sourcing provide policy makers at national and international level with information on the reasons for, the extent of, and the consequences of, international sourcing. [The EU statistics on international sourcing](#) presents this from a European view; in developing countries, such an approach must be adapted to their reality and their dependence on international sourcing.

Outsourcing, subcontracting and globalisation of the production have seen the demand for services increase. Enterprises use service providers both for non-core activities (e.g. transport, marketing services) and for parts of their core activities to increase flexibility (e.g. labour recruitment services, international sourcing to low-cost countries). Other reasons include technological developments, which allow services to be delivered directly to customers anywhere in the world (e.g. internet sales, call centres, helpdesks, software development, billing services, etc.). These activities are very dynamic, and their labour-intensive nature has also attracted interest in their potential as providers of new jobs. [Business services statistics](#) provide information on service providers, types of service purchased, the location of the main service provider, barriers to purchasing services and so forth, as well as information on service related investments in intangibles (such as tradable rights, ICT, R&D, marketing and sales). [EU business services statistics](#) provide an example of how such statistics can be set up.

While [business demography statistics](#) provide data on enterprise births, survivals, deaths and related changes in employment, the purpose of [factors of business success statistics](#) is to shed more light on factors that support or hamper the success of newly born enterprises. Such statistics provide information on the motivations for starting up a business, barriers and risks encountered during the first years of existence, the current situation of the enterprise, and business plans for future development. This information is relevant for better targeted policy-making to boost entrepreneurship.

V3.5.2.2. THE FRAMEWORK FOR BUSINESS STATISTICS

Statistical units are an essential component of the integrated framework of business statistics. With the use of common definitions of statistical units, integrated statistical information can be provided. The general practice is to use **the enterprise** as the statistical unit (observation unit). An enterprise may carry out one or more economic activities at one or more locations.

A **classification of economic activities** is designed to categorise data for the 'units of activity'. A unit of activity can be an individual factory or a group of factories comprising an economic entity (such as an enterprise or a division within a larger enterprise). The international reference classification of economic activity is the UN's **International Standard Industrial Classification of All Economic Activities (ISIC)**. ISIC is currently available in Revision 4, but most developing countries use ISIC Rev. 3.1 or Rev 3.0 or a national adaptation of one of these. ISIC presents a coherent and consistent classification structure of economic activities, based on internationally agreed concepts, definitions, principles and classification rules. It establishes a comprehensive framework for collecting and reporting economic data, in a format designed for economic analysis, decision-taking and policy-making. Some regional variants of ISIC are also established, such as the **EU's Statistical Classification of Economic Activities in the European Community (NACE)** and the **North American Industry Classification System (NAICS)**.

The availability of business registers is vital to the compilation of both short-term and structural business statistics. Business registers is a key tool for the preparation and co-ordination of surveys, and for grossing up survey results. The **Wiesbaden Group on Business Registers** is an international expert group under the umbrella of the UN Statistical Commission. It is engaged in further development of business registers, survey frames and associated topics. One of the major topics for the group's current work is the challenges for business registers resulting from globalisation. In particular, the Wiesbaden Group is currently focusing on business registers and business statistics in developing countries. The European Statistical System has a leading role in the development of **business registers** and can serve as inspiration and basis. In particular, the Eurostat **Business Registers Recommendations Manual** provides a comprehensive overview of good practices in all key areas of statistical business register development.

V3.5.3. Sources of data

V3.5.3.1. COLLECTING AND COMPILING BUSINESS STATISTICS

The most common way of collecting data on businesses is for the NSI to carry out a (stratified) survey amongst registered enterprises. Samples for business surveys are drawn from a *sampling frame* such as a business register, ideally a register established and maintained specifically for statistical purposes. However, in many developing countries the 'informal sector' is of importance for the economy as a whole. The NSI should develop a strategy for covering value created and the employment of the 'informal' economy and include this in their national statistical strategy. When no business statistics are published by the NSI, there may be other sources for data on businesses:

Box V3.5.1: Alternative sources for data on enterprises

- The NSI: Data may not be published when the quality is not acceptable or the confidentiality of information of individual business must be protected. Information originally collected for other purposes can sometimes also be of interest;
- Tax authorities: Quite detailed data on businesses are often held by the tax authorities and are normally a secure long-term source of business data. However, it will only cover registered businesses, and the definition of variables may differ from the ones required for statistics. There may also be quality issues, as businesses will seek to minimize taxable income. Tax data provides NSIs with information for complementing survey information, for quality checking and for grossing up;
- Line ministries and other administrations: Within the scope of their responsibilities, line ministries and other administrations often hold data on enterprises in specific sectors. The coverage, definition and reliability issues are similar to those of tax data. Data on publicly owned enterprises are often held by the responsible ministry or administration;
- Business federations: These often hold information on their members. However, such information does not cover non-members, and sector federations only hold data on business in their own business sector;
- Annual reports and public accounts of enterprises: Such accounts can be required by law or by stock exchange rules (for enterprises listed on the stock exchange). Such information is generally standardised (although simplified for small enterprises), and can be used to complement, verify and aggregate survey information;
- Credit information providers: These hold vast amounts of enterprise data drawn from public sources, quality assured and analysed. However, such data may be quite costly to acquire.

Small and medium-sized enterprises (SMEs) are central to economic development and employment in most countries. Small enterprises are widespread in the informal economy, and these are not covered by surveys based on business registers. Even registered SMEs are commonly exempt from reporting obligations or report according to simplified rules, and are often represented by only a minor proportion in stratified business surveys. Given the diverse and often incomplete and deficient state of SME statistics, careful analysis of the raw data is important before attempting to draw policy conclusions. SME statistics are a sub-set of business statistics for the whole economy and should not be seen in isolation.

For business statistics, huge gains in efficiency and data quality can normally be realised through the use of administrative data, either as data source, as basis for estimations or as benchmark for validation. A close cooperation and coordination between the NSI and other administrations that collect enterprise data, in particular the tax authorities, is therefore highly recommended. The advantages and prerequisites of the different data collection modes and sources are discussed in detail in section B.2.2.1.

The annual *Structural Business Statistics* are mainly based on data obtained directly from the enterprises via statistical surveys, or data coming from administrative sources (e.g. taxation data (incl. VAT data), data from business registers, etc.).

No matter what the source is, *Structural Business Statistics* describe the economy through the observation of units engaged in an economic activity. An enterprise carries out one or more activities at one or more locations and may comprise one or more legal units. Enterprises that are active in more than one economic activity are classified under the activity class (ISIC or national classification) that corresponds to their main activity, normally the one that generates the largest amount of value added.

Main indicators of the *Structural Business Statistics* are: Number of enterprises, persons employed and employees; Turnover, production value, value added at factor cost and gross operating surplus; Purchases of goods and services; Change in stocks of goods and services; Personnel costs; Gross investments and sales of tangible investment goods.

Most of the *Structural Business Statistics* is broken-down by sectors (industry, construction, trade and services), by region (according to the location of the enterprises) and by size class (according to the number of the employed personnel). Structural business statistics are used as one of the key inputs for the compilation of production-related annual *National Accounts* statistics.

Short-Term Statistics indicators are tools for formulating and monitoring the economic and monetary policy. They generally have a monthly frequency and measure recent developments in each country. STS data are in great demand for economic analysis by national policy makers and central banks, international organisations and donors, private companies, financial markets, the media and other analysts.

STS indicators provide information on how prices or turnover have risen or fallen in the previous month, the previous quarter, or the previous 12 months. These indicators are provided in the form of indices, which allow the rapid assessment of the economic climate within an economy. STS indices cover four major domains: industry, construction, retail trade and other services. These activities are defined in relation to a classification of activities, i.e. ISIC or national classification. Main indicators covered by STS are, dependent on the major domain: Production and/or turnover; Number of persons employed; Hours worked and gross wages and salaries (industry and construction); Prices. For the industry domain, new orders and turnover are broken down by domestic and non-domestic. For construction, production

is broken down by production of buildings and civil engineering. In addition, construction costs and construction permits data are collected.

Basically, STS data are derived from business surveys. However, also administrative data such as VAT data (which are normally collected with monthly, bi-monthly or quarterly frequency) or other sources outside the national statistical systems are used, either as data source or basis for estimation, or for complementing or validating the survey data.

Box V3.5.2: Indexes

An index measures trends in a time-series. In the case of short-term business statistics, the indices represent the movements in an indicator between a base year or month and the current period.

The index average is 100 for the base period; an index of 105 means that there has been a 5 % increase since the base period while an index of 97 means that there has been a 3 % decrease compared with the base period.

Many economic activities are influenced by regular variation due to seasons or social conventions (e.g. weather effects for construction). Data should be adjusted to make them comparable from one month to another. A seasonally adjusted series is a time-series from which the effects of regular seasonal influences have been removed. In general, the seasonally adjusted series are smoother than the gross series and this further facilitates month-to-month comparisons. For some economic activities, the number of weekdays has a significant impact on the level of a series. For example, monthly activity in retail trade depends on the number of Saturdays during the reference month. Series are working-day adjusted when the effects linked to the number of days of different types in the reference month are removed from the series.

Most STS indicators are adjusted for working days and/or seasonally adjusted by using **TRAMO (Time series Regression with ARIMA noise, Missing values and Outliers)** and **SEATS (Signal Extraction in ARIMA Time Series)** software, once the influence of working days or seasonal variations has been detected.

Statistics on industrial products generally covers the products from mining, quarrying and manufacturing activities, in some countries also covering recycling products or utility products. The purpose of the statistics is to report, for each product, how much has been produced in the reporting country during the reference period. This means that the product statistics relate to products (not to activities), and they are therefore not directly comparable with activity-based statistics such as Structural Business Statistics. Product statistics differ from external trade statistics in that the latter can be thought of as event-based: each time a product crosses a border it is registered as a 'trade', and if the same product crosses borders several times it is recorded as several trades.

The product statistics are normally annual, but may for specific industries or products be more frequent. Products are classified according to a standard classification, e.g. an international classification such as the **Harmonized System (HS) or the Standard International Trade Classification (SITC)**, or (most frequently) a national adaptation of such international classifications. These classifications normally are either a classification for international trade (such as the HS and SITC) or have a close connection to these, so that production data can be combined with import and export data for analysis of product markets. The product statistics are normally based on surveys of producing enterprises, requesting data on the physical volume of production and the value of production.

Business demography statistics present data on the active population of enterprises, their birth, survival and death. Special attention is paid to the impact of these demographic events on employment levels. This data can be used to analyse the dynamics and innovation of different markets: for example, entrepreneurship in terms of the propensity to start a new business, or the contribution of newly-born enterprises to the creation of jobs.

V3.5.3.2. INTERNATIONAL SOURCES FOR BUSINESS STATISTICS

In cooperation with the OECD, the statistics branch of the **United Nations Industrial Development Organization (UNIDO)** compiles detailed key industrial statistics with worldwide coverage. UNIDO's Statistics Unit also provides technical assistance to developing countries in strengthening their capacity for conducting industrial surveys, maintaining business registers and short-term statistical indicators and carrying out data analysis of industrial performance. UNIDO also designed the special National Industrial Statistics Programme (NISP) package for developing systems to collect basic industrial statistics on priority data items.

UNIDO maintains the worldwide industrial statistical databases **INDSTAT4**, **INDSTAT2** and **IDSB** and produces Statistical Country Briefs, all available on the **UNIDO statistics website**. The key statistical publication is the **International Yearbook of Industrial Statistics**. UNIDO strongly emphasises the quality of the statistics, in terms of international comparability, concepts and definitions, classification and coverage.

The **INDSTAT4** database contains data by country, year and ISIC at the 3- and 4-digit levels of ISIC (Revision 3), from 1990 on. The **INDSTAT2** database covers, for 161 countries, historical time series data from 1963 to 2007 for the manufacturing sector at 2-digit level of ISIC Revision 3. The **IDSB** database contains data broken down by country, year and industry at 4-digit level of ISIC: one dataset according to ISIC Revision 2 and one dataset according to ISIC Revision 3. The data come from output data reported by NSIs, together with UNIDO estimates for ISIC-based international trade from the **UN Commodity Trade Database (COMTRADE)**.

The **United Nations Statistics Division (UNSD)** produced the structural industrial statistics before these were taken over by UNIDO; UNSD continues to maintain general industrial statistics information for mining activities and utilities activities (i.e. production and distribution of electricity, gas and water). UNSD is also the main source for worldwide statistics on manufactured products, the **Industrial Commodity Statistics**. The statistics cover physical quantities of major industrial products, classified according to the UN's **List of Industrial Products**. Furthermore, the UNSD produces monthly, quarterly and yearly indices of industrial production, collected through a questionnaire sent to NSIs. The indices are compiled according to the 2-digit level categories of ISIC Revision 4 (for countries that do not yet use ISIC Revision 4, data are still collected according to ISIC Revision 3).

Eurostat is also an important source of business statistics. Within the frame of the accession process, Eurostat has a close cooperation with the **Candidate Countries and Potential Candidates**. With the support of Eurostat and the European Statistical System (ESS), these countries are working to bring their business statistics systems in line with the *acquis* in this field and ESS standards. Furthermore, through the European Neighbourhood Policy (ENP) Eurostat is also supporting and cooperating with the NSIs in the **ENP East** countries and the **ENP South** countries in developing their statistical systems.

V3.5.4. Analysing data quality and identifying problems

V3.5.4.1. SPECIFIC QUALITY ISSUES FOR BUSINESS STATISTICS

Much of the discussion on the reliability of statistics focuses on issues of "data quality". Without going into too much detail, it is sufficient to say that it covers a number of dimensions, including accuracy, timeliness, relevance, accessibility and comparability (this is discussed in detail in section C.5.3).

User relevance of business statistics

A central question concerning the quality of statistics is whether they are 'fit for purpose'. In other words, are the statistics meeting the information needs of users (and potential users)? This can only be answered through consultations with users of the statistics concerned, be it through user surveys, direct consultations or permanent advisory groups of users. Key users of business statistics are national accountants and policy-makers and administrators involved in economic development policies. As economic development is seen as one of the central pillars of overall development, e.g. in the fight against poverty, donors, international organisations and NGOs also have a keen interest. Furthermore, business statistics is a key information source for economic analysis, involving businesses themselves, financial analysts, researchers, media and interested citizens.

Timeliness and punctuality of dissemination

For business statistics in general and short-term statistics in particular, the issue of timeliness and punctuality of publishing statistics is of great importance. Short-term statistics are used to analyse the business cycle and current economic trends, and the publication of new statistics can have rapid and significant impact on markets. The users' demand for up-to-date figures that are published frequently and on time at pre-established dates can best be met by establishing a release calendar for the statistics. A challenge in many developing countries is to set up and follow a release calendar for official statistics, both for business and other economic statistics and for other statistical areas. This is closely related with the issue of dissemination: it is not sufficient to have "good business statistics" stored somewhere inside the statistical office; they must be available in an appropriate form to all potential users. A good practice example is the **Eurostat free dissemination database**, which is the main repository of business statistics in Europe.

The importance of the statistical unit for business statistics

Statistics for a given characteristic have the greatest usefulness when they enable reliable comparisons across countries and over time. Both are sometimes limited by methodological differences between countries and changes in methodology from one year to another. A main issue on business statistics is related to the definition of statistical units, the variables and terminology. The recommended **statistical unit** is the enterprise; however, for some purposes data is collected and disseminated by establishment or local unit. When data are made available to users, it should be clearly stated to what the data refers to. The enterprise is often defined as the Legal Unit (i.e. the legal entity), even in developed countries, as this makes the enterprises easy to identify and handle across different registers and sources. However, this should be done with caution, as changes in economic circumstances and legislation (especially tax legislation) can lead to split and/or mergers of legal units without any changes in the real production structure.

The problem of varying terminology

Terminology used in business accounting may vary greatly from one country to another. For example, while the word "turnover" means total sales in the UK and many European countries, for OECD "turnover" means the sum of gross sales plus some other incomes but excluding revenues from rental of real estate, contributions and gifts, etc. In the **Generally Accepted Accounting Principles (GAAP)** of the United States, "turnover" is the number of times an asset is replaced during a financial period, often used in the context of inventory turnover or accounts receivable turnover. In securities, for either a portfolio or exchange, "turnover" is the number of shares traded for a period as a percentage of the total shares.

The effects of accounting rules

Business accounting principles may be the same in many countries, but actual accounting rules vary from one country to another. These rules affect the adjustment required for data collected from business accounts in order to use them for economic statistics. For example:

- A. Some countries require accountants to expense expenditures on software while others countries allow capitalization. In countries where capitalisation is not allowed, the expenses need to be imputed as output, which is then treated as gross capital formation.
- B. In business accounting, net assets are mostly valued as the sum of the historical value of gross capital formation less depreciation (based on historical value). One cannot derive gross capital formation by deducting values of assets in two adjacent periods, as assets in business statistics should be valued at replacement costs.

A particular issue is the time period covered by business statistics versus the accounting periods. Annual business statistics generally follow the calendar year. However, some countries prescribe (or at least permit) accounting years different from the calendar year, e.g. from 1 May to 30 April of the following year. This causes problems for using tax and business accounts data as a basis for business statistics.

Box V3.5.3: Example on solving inconsistency and missing data

The following example gives an indication how the inconsistency of data can be solved and the missing data can be estimated.

Inconsistency

We have data about the total Value Added Tax (VAT) for ISIC Rev. 3.1 class 5010 'Sale of motor vehicles' and data on turnover is available for a given period of time. Knowing the level of taxation for that specific type of retail trade we can compare the VAT to Turnover ratio and detect the possible inconsistency:

- The VAT value is 200 and the Turnover value is 2000: VAT/Turnover = 10%;
- However, the VAT level for this economic activity is 5%

The data should be checked using any supplementary information available, such as turnover data from public financial reports or turnover per employee ratio. Such ratios are constructed using information for similar businesses for which both variables are available and considered reliable. The average turnover per head ratios are then calculated based on economic activity and size. Turnover per person ratios can also be used to estimate the missing variables. In this specific case of motor vehicles, also data from national vehicle registration authorities can be a valuable information source for checking and completing the statistics.

Using different surveys and sources to improve the business statistics

In spite of all efforts to reduce the response burden on businesses, it is inevitable that some businesses will have to respond to more than one business survey. Especially the largest enterprises with an important impact on the national economy will be included in most business surveys. In addition, incorporated businesses are normally obliged to publish their key economic data. As long as it is possible to identify individual businesses, e.g. through specific identification numbers (VAT number, tax number), NSIs should utilise all available information on a business. By cross-checking surveys and other sources for validating data and impute missing values, significant gains in quality can be made. Some advanced NSIs have constructed integrated databases where all sources for data on businesses are directly available for cross-checking. However, gains in quality can be achieved by simply giving the staff responsible for a specific survey access to the paper questionnaires for the same business in other surveys and/or to the business' annual report.

V3.5.4.2. THE INFORMAL ECONOMY

An important issue is the **informal sector**, which in some developing countries can record a substantial share in the total economy and engage a large proportion of the workforce. Generally, the informal sector activities provide goods and services whose production and distribution are perfectly legal. In some countries, a large part of informal sector enterprises are actually registered in some way, or pay taxes, even though they may not be in a position to comply with the full range of legal and administrative requirements.

According to the 15th International Conference of Labour Statisticians (ICLS), informal sector enterprises are characterised by small size in terms of employment, non-registration of enterprises and non-registration of employees. Only enterprises without any of its employees registered should be counted to the informal sector.

The **UN Expert Group on Informal Sector Statistics (Delhi Group)** has endeavoured to harmonise national definitions of the informal sector on the basis of the framework set by the international definition. The Delhi Group has recognised that there are limits to harmonisation; nevertheless, on the basis of the largest common denominator, the Group was able to identify a subset of the informal sector that could be defined uniformly and for which countries could make internationally comparable data available. Accordingly, the Delhi Group concludes that:

"Since the informal sector manifests itself in different ways in different countries, national definitions of the informal sector cannot be fully harmonised at present. International agencies should disseminate informal sector data according to the national definitions used. In order to enhance the international comparability of informal sector statistics, they should also disseminate data for the subset of the informal sector, which can be defined uniformly"

V3.5.5. Improving sector statistics

This section focuses on actions to reduce costs and the burden on respondents, the NSIs and other statistics producers. All new statistical requirements increase the burden on data providers (i.e. enterprises) and on the producers of statistics (NSIs). Given these pressures at national and international level, this must be tackled by each country and the most suitable solutions in the national context sought.

Use of administrative data

Businesses usually have an understanding of the reasons for supplying data for registration and taxation purposes, even if they do not like doing so. However, they often see statistical data requests as an extra, less necessary, burden. There is consensus that one of the best solutions is to use already existing data as far as possible, in particular administrative data. However, the information contained in administrative sources is not primarily collected for statistical purposes. Administrative data sources of special interest to business statistics are:

- Value Added Tax data;
- Business/Profit Taxation data;
- Register of Chamber of Commerce and National Business Registration Authorities;
- Central Bank records;
- Social Security data, etc.

The use of administrative data to produce statistics has both benefits and limitations. One of the main benefits is that data already exists and is (relatively) complete for the business population covered. The use of administrative sources also eliminates survey errors, removes (or significantly reduces) non-response, and provides more accurate and detailed estimates for various sub-populations.

Because the administrative data are collected according to administrative concepts and definitions, there are normally differences between these and the statistical concepts. Therefore, the issue of matching and calibrating data is very important and resource consuming. The classification systems used within administrative sources may be different to those used in the statistical world, and these sources may not cover the whole population of interest (e.g. enterprises exempt from VAT are not covered by the VAT data). For *Short-Term Statistics*, the administrative data may be available too late in order to produce fresh data.

To resolve such conflicts it is necessary to establish priority rules, by deciding which source is most reliable for a particular variable. Once a priority order of sources has been determined for a variable, it should be possible to ensure that data from a high priority source are not overwritten from a lower priority source. This process is made much easier if source codes are stored alongside variables for which several sources are available.

Another important issue is the problem of missing data, which is not unique to administrative sources. It can also be due to full or partial non-response to statistical surveys, or even to the removal of data values during the editing process. However, with administrative sources, the issues can sometimes be different, particularly as the problem of missing data can often be more systematic.

Often, problems concerning incomplete coverage of the statistical population or missing information on certain issues can be addressed through mixed mode data collection. This means that the administrative data is used as far as possible, but that information which is not available in the administrative data is collected by survey.

Business registers

To identify the businesses to be included in a survey, a consistent and reliable 'survey frame' is needed. This is normally a business register of some sort, ideally established or adapted for statistical purposes. However, in developing countries such a well-maintained and updated statistical register is normally not available. In this case, one should in the short term make use of any business registers available and seek to combine and harmonise them as far as possible. However, registers do not cover the informal economy. In the longer term, a business register for statistical surveys should be established. Critical is the sustainability of the register, i.e. that proper maintenance and update procedures and the associated resources are in place.

The informal economy

In many developing countries the 'informal sector' is of vital importance for employment and for the value created in the economy. However, the very nature of the informal economy makes it difficult to capture. The NSI needs to develop both a short term and a longer term strategy for capturing the activities of the 'informal' economy. This strategy should be integrated in the national statistical strategy. Box 11.5 presents best practices for collecting data on the informal economy. However, the approach should be adapted according to national priorities and the resources available.

Box V3.5.4: How to collect information on the 'informal' economy?

The best way to measure the informal sector critically depends on the aims of the measurement. The OECD handbook [Measuring the Non-Observed Economy](#) provides valuable guidance on how to collect information on the 'informal' (non-observed) economy, dependent on what the information should be used for.

If the aim simply is to monitor the informal sector employment in number as well as the characteristics and conditions of the work, the OECD Handbook recommends to:

- Add a few questions to the Labour Force Survey or similar household survey to identify informal sector work. (However, informal sector employment is often the second job of the interviewed person, e.g. farming for the own family's needs. The interviewers should follow up on such issues in the interviews.)

If the aim is to collect detailed structural information (e.g. number and characteristics of enterprises, production, employment, income, capital, etc.), a dedicated informal sector survey should be carried out:

The OECD Handbook recommends a mixed household-enterprise survey as the most suitable approach to collect comprehensive data about the informal sector. In a mixed household-enterprise survey, a sample of households is selected and each household is asked whether any of its members is an *entrepreneur*, i.e., the sole proprietor of, or a partner in, an unincorporated enterprise. Data for the enterprises identified (or for a sub-sample) are then collected.

Such a survey might be an independent survey, a module attached to a household survey or an Integrated survey. The design of the survey is multi-stage:

- Select a sample of geographical areas;
- List or interview all households in these sample areas and identify the owners of informal enterprises;
- Select the households with owners of informal sector enterprises;
- Carry out main interviews of these households and enterprise owners.

An alternative to the mixed household-enterprise survey is an enterprise survey. However, this requires a 'sampling frame', i.e. a business register comprising also the informal enterprises or a recent census of the informal economic units.

Box V3.5.5: Method for measuring the informal sector: 1-2-3 surveys

The economic activity of the informal sector is not recorded through standard business surveys. Measurement of the informal sector has to consider and solve two main problems:

- The ambiguity and unclear delineation of the informal sector;
- The difficulty in capturing quantitative data for the informal sector.

1-2-3 surveys provide a precise definition and a way to measure the informal sector. They are 'modular mixed surveys', combining surveys on individuals, households and enterprises. This approach is considered the most appropriate as it collects more exhaustive information than a simple household or enterprise survey. The 1-2-3 survey is considered as a robust and proven method for the measurement and data collection on the informal sector and on informal employment. It is flexible and can be adapted to national circumstances. The method consists of three phases:

- **Phase 1 (Labour Force Survey):** Survey collecting data on the economic activities of individuals and households concerning the supply of employment (employment / unemployment) and the integration of individuals into the job market and workplaces (working conditions). This survey provides information on the functioning of the labour market, especially on employment in the informal sector and on informal employment in the formal sector. The information collected is also used as a filter for the selection of the sample for phase 2.
- **Phase 2 (Survey of the Informal Sector; also called Informal Production Unit Survey):** Survey on informal production units (IPU), from a supply-side perspective. This survey is based on a stratified sample according to the sector of activity and status of the leader of the informal production unit. The sample of production units is selected from households participating in Phase 1. Principal economic and activity characteristics can be measured (e.g. value added, financing, sector and place of activity).
- **Phase 3 ("Mixed Survey"):** Combination of a household consumption survey and a survey on demand (i.e. survey from the demand-side perspective) in the formal and informal sector. The sample is taken as a subsample of households from Phase 1 and aims at results on consumption, formal / informal demand and poverty. This survey provides information for the estimation of household income and the scarcity of money of households which are necessary for the estimation of the living standard and poverty levels of households.

There is extensive experience with the [1-2-3 survey methodology in Africa](#). The French DIAL Development Economics research centre has developed the [KIT 1-2-3 software and documentation database solution for 1-2-3 surveys](#) in developing countries.

Box V3.5.6: Example: Improving the statistics on the informal sector in Cameroon

Cameroon's National Strategy for the Development of Statistics for the years 2009 to 2012 expresses a strong need to improve the quality, reliability and timeliness of data from the national statistical system. A large part of the economic value in Cameroon is created in the informal sector, which accounted for more than 90 per cent of total employment in 2005. The NSDS's economic statistics programme is focused on providing robust economic indicators, especially concerning population and households, national accounts, environment, poverty and the informal economy.

In order to provide reliable data on population, households and the informal sector (in particular in terms of value added and employment), Cameroon was one of the first developing countries designing and implementing a '1-2-3 survey' for the collection of data on the informal sector. It also uses some elements of the '1-2-3 survey' for other statistics and for the calculation of the weight of the informal sector in national accounts. The informal sector in Cameroon is defined as "the entirety of production units of goods and services without tax liability and / or without written accountancy in the sense of a standard form of accounts".

Cameroon has carried out the 1-2-3 survey four times: in the Yaoundé urban area in 1993 (phases 1-2-3) and 1994 (only phase 1), and at national level in 2005 (phases 1-2) and 2007 (only phase 1). The data collected in phase 2 of the survey are most relevant to business statistics and national accounts, as the informal production units (IPUs) are the surveyed entities in this phase. The characteristics for each survey phase are as follows:

- **Phase 1 (1993, 1994, 2005 and 2007):** Household survey on labour supply and the integration of individuals into the labour market (e.g. information on activity and unemployment rates, salaries, education and qualifications of employees, mobility and occupational safety). Households were selected according to socio-economic strata, obtained from the population census, in two steps: selection of a clustered household sample of which a certain number of households was selected.
- **Phase 2 (1993 and 2005):** Survey of informal production units (IPUs), providing complementary information for the national accounts through the establishment of production accounts and the fragmentation / division of the informal sector. This survey phase also provides information to analyse the behaviour of persons working in the informal sector and the integration of the informal sector in the national production system. The sample was drawn from the sample used in phase 1, of entities identified as informal production units. For the survey in 2005, the sample was stratified so that the number of IPUs was proportional to the number of households in urban (with emphasis on a representative sample in Douala and Yaoundé), semi-urban and rural areas.
- **Phase 3 (1993):** Household budget survey including questions on the consumption behaviour of households, i.e. origin of bought products (formal or informal sector) and on the main motivation for households to buy products at certain places. The survey sample is selected from the entirety of households but stratified according to the gender of the head of the household and the household's income.

Cameroon notes that for the collection of reliable, high quality data, the execution of all phases of the survey at regular intervals and at national level as well as the selection of a consistent sample seem to be indispensable.

Source: National Statistical Institute of Cameroon: [The informal sector and its coverage in the national accounts: Cameroon's experience](#) (presented at the Conference on International Outreach and Coordination in National Accounts for Sustainable Growth and Development, Luxembourg, May 2008)

Box V3.5.7: Example: Improving the business statistics of Sierra Leone

Sierra Leone is one of the poorest countries in the world. Its most pressing need is to reduce poverty and to progress towards the MDGs. Thus, the core priority of [Sierra Leone's National Strategy for the Development of Statistics](#) (see also section C.6.1.2 on NSDS) for the years 2008 to 2012 is to improve the quality, reliability and timeliness of data from the national statistical system especially with respect to these priorities.

The three main sectors of the economy are agriculture, mining and trade. A large part of the value is created in the informal sector, which is providing employment to more than 70 per cent of the population. The NSDS's economic statistics programme is focused on providing robust economic indicators for development planning and the government's Poverty Reduction Strategy. Sound and transparent economic statistics are required on such issues as fiscal deficit, real sector growth, monetary stability and external sector performance. These statistics must also meet the data requirements of international and multilateral organisations (IMF, World Bank, UNSD, ECOWAS and others). In addition to improved national accounts and related statistics, the NSDS outlines the following key areas and actions for improving the business statistics:

- An improved and enhanced business register to provide a sound basis for improved sample surveys of businesses. The register will be updated by a combination of administrative sources (e.g. from the National Social Security and Insurance Trust and the National Revenue Authority), feedback from survey staff in the districts and special 'proving' surveys. Small enterprises with less than 10 employees tend to be missing from the administrative sources. To counter this, a census of establishment is foreseen every 5 years, in order to capture also these enterprises;
- Annual data on employment and wages by industry in the formal sector, based on tax data (Pay-As-You-Earn ; PAYE) from the national revenue authority (NRA);
- Expanded agricultural statistics, as agriculture is the mainstay of the national economy;
- An informal sector business survey and report, as this is an important element of economic activity not recorded through the standard business surveys. The 'Non Observed Economy' comprises informal sector production and production of households for their own use, as well as underground and illegal production. Due to its size and importance to the economy, informal sector statistics are needed for the national accounts and to monitor the small-scale business sector and devise development policies for the small and medium-sized enterprises. Information gathered should cover the informal sector's main actors and activities, its size in terms of employment and value added, key factors influencing this sector, etc.

The response rate to the surveys is a problem. Statistics Sierra Leone (SSL) aims to improve these through a mixture of education, promotion, persistence and penalties for businesses that refuse to cooperate. A key message to the businesses is that the confidentiality of data is guaranteed by the Statistics Law and that neither the government nor the tax authorities have access to the statistical data.

To find out more...**Quality and methodology**

- UN Statistical Division: [The Development of an Integrated Approach to Business Statistics at United Nations Statistics Division](#)
- UN Statistical Division: [International Recommendations for Industrial Statistics 2008](#)
- [OECD Quality Measurement Framework](#)
- Eurostat: [Quality measures for economic indicators](#)
- Eurostat-OECD [Manual on Business Demography Statistics](#)
- UN Statistical Division: [Knowledgebase on Economic Statistics - Methods and Country Practices](#)
- OECD: [Completion of changes to the Main Economic Indicators paper](#)
- UN Statistical Division: [International Recommendations for the Index of Industrial Production 2010 \(IRIIP 2010\)](#)
- Eurostat: [Business Registers Recommendations Manual](#)

Classifications

- UN Statistical Division's [Classifications registry](#), including [National classifications](#)
- Eurostat's [Metadata Server RAMON](#)

Business statistics and data sources

- United Nations Industrial Development Organization (UNIDO): [Statistical databases](#)
- UN Statistical Division: [Industry Statistics](#)
- Eurostat's [Structural Business Statistics \(SBS\)](#), [Short-Term Statistics \(STS\)](#) and [PRODCOM statistics on manufactured goods](#)
- OECD: [Industry statistics and Services statistics](#)

The informal sector

- OECD: [Measuring the Non-Observed Economy - A Handbook](#)
- Eurostat: ['Essential SNA: Building the Basics' – chapter VI 'The Informal Sector'](#)
- The [UN Expert Group on Informal Sector Statistics \(Delhi Group\)](#)
- African Statistical Journal (volume 9, November 2009): [Measuring the informal sector and informal employment: the experience drawn from 1-2-3 surveys in African countries](#) (Mireille Razafindrakoto, François Roubaud and Constance Torelli)
- DIAL: [KIT 1-2-3 \(FR\)](#)

V3.6

Transport statistics



V3.6. Transport statistics

The chapter in brief

Transport infrastructure and networks play an important role in economic and social cohesion. Transport networks are important for trade and economic development by bringing goods and services to customers and by bringing passengers to work, schools, etc. Transport is also a key dimension of external trade (see chapter V3.4.).

This chapter covers a wide area of transport statistics, such as infrastructure, equipment, enterprises, traffic flows, passengers and freight, accidents, etc. It starts by identifying the main policy areas for which these statistics are used (see also section B.1.5.1 on the European Consensus on Development and section B.4.3 on the relationship between policy areas and statistics fields). The chapter provides an overview over the different transport statistics collected and information about the most important definitions and methods. The main sources of data are presented, followed by advice on how to analyse the quality of transport statistics. Most importantly, the chapter concludes with advice on how to build or to improve transport statistics in developing countries.

V3.6.1. Policy applications: what transport data is used for

Transport statistics have a wide variety of uses and allow monitoring of a wide range of areas:

- Transport plays a crucial role in the economy, bringing goods and services to customers: mobility of goods is necessary to facilitate trade and economic growth. The ability to move goods safely, quickly and cost-efficiently to markets is important for international trade, national distributive trades, and economic development. Strains on infrastructure, demonstrated by congestion and delays, as well as the constraints of disparate standards, technical barriers, poor interoperability and governance could all impact on economic development. All dimensions of sustainability - environmental, economic and social - are strongly impacted by transport activity.
- Transport is also necessary to take passengers to work or school (but also to shops or leisure activities). Within cities, transport infrastructure, norm setting, congestion and traffic management, public transport services, infrastructure charging, urban planning, safety and security have to be managed and improved. In addition, inter-urban passenger travel by rail, road or airplane, can also be strengthened by improvements to the infrastructure.
- Transport infrastructure and networks play an important role in economic and social cohesion, by linking island, landlocked and peripheral regions with more central regions, through interconnecting and interoperable national networks by land, air, sea and inland waterways. Better integration of national networks fosters regional cooperation and integration between neighbouring

countries. From a regional perspective, an extensive network of roads, motorways and railway links is a prerequisite for economic development and interregional competitiveness.

- Growing mobility has an undesirable impact on safety, on congestion and on the environment. Thus transport statistics are also needed to address the underlying issues and make it easier to model them. In particular, the transport sector is the fastest growing consumer of energy and producer of greenhouse gases.
- Improvements in safety and security in transport is a very important question and statistics are needed to monitor it.
- Intermodal freight transport policy supports the efficient 'door to door' movement of goods, using two or more modes of transport, in a highly integrated transport chain. Each mode of transport has its own advantages either in terms of potential capacity, levels of safety, flexibility, energy consumption, or environmental impact. As such, this intermodal transport allows each mode to play its role in building transport chains which overall are more efficient, cost effective and sustainable.

Box V3.6.1: Links between transport and Millennium Development Goals

The 2005 African Union Summit recognised the important role of transport infrastructure and services in meeting the Millennium Development Goals (MDGs). A number of targets were set for the transport sector, covering each of the eight MDGs. (See section B.1.1. and section B.4.1. for more information on the MDGs.) These targets, to be reached by 2015, include:

- Have the proportion of rural population living beyond 2 km of an all-season mode of transport, in order to improve access to inputs and markets and generation of employment opportunities;
- Narrow down the difference in average transport cost within Africa by 50 percent as compared to Asia;
- Reduce rate of accident fatalities arising from road and other means of transport by half;
- Have the number of urban and rural residents for whom mobility problems severely constrain access to employment and essential services;
- Promote environmental sustainability in all transport operations and development programs;
- Phase out the production and use of leaded petrol;
- Dismantle all physical and non-physical transport barriers that increase journey time, customs clearance and border delays and impede the flow of goods and services;
- Take into consideration the phenomenon of desertification and sand movement in the transport policies and programs.

V3.6.2. Concepts and definitions

The statistics covered in this section are defined by section 2.4.4 ‘Transport’ of the new UNECE Classification of International Statistics Activities, which was introduced in section B.4.3. This area covers statistics on all modes of transport – air, rail, road, inland waterways, sea - and includes topics like transport infrastructure, equipment, traffic flows, personal mobility, safety, energy consumption, transport enterprises, passengers and freight transport, transport sector trends, road traffic accidents. It excludes transport prices.

Transport statistics collect information on traffic (in vehicle-kilometres), transport measurement (number of passengers and tonnes) and transport performance (passenger-kilometres or tonne-kilometres) by the individual modes: road, rail, inland waterway, sea and air. Aggregated statistics are also available on enterprises, employment, infrastructure and means of transport. The aim is to measure the transport activity either on the territory of an individual country or across a multi-country region or sub-region.

A [multilingual glossary of transport statistics](#) is maintained and developed by Eurostat in collaboration with two international partners, the [United Nations Economic Commission for Europe \(UNECE\)](#) and the [International Transport Forum \(ITF\)](#), in order to promote common definitions and concepts for transport statistics. This glossary provides reference definitions for transport statistics for all modes and meets the need to harmonise transport statistics at the international level.

Numerous statistical indicators are collected in order to give a complete overview of transport activity in a country. The main ones are:

- **Infrastructure:** length of railway lines operated, length of motorways and other roads, length of navigable inland waterways, length of pipelines operated;
- **Transport equipment:** number of road vehicles (motorcycles, passenger cars, motor coaches and buses, lorries and road tractors), number of locomotives and wagons, number of self-propelled vessels, tugs and pushers, and dumb and pushed vessels; new registrations of vehicles during the year;
- **Transport enterprises:** number of enterprises, number of employees;
- **Traffic:** vehicle-kilometres;
- **Transport measurement:** number of passengers and tonnes carried, passenger-kilometres, tonne-kilometres.

Several classifications are needed for transport statistics. In particular, it is necessary to know the type of goods carried. The [NST 2007 \(Nomenclature uniforme des marchandises pour les statistiques des transports\)](#) is the commodity classification used for the European Union statistics on transport. NST 2007 takes account of the economic activity

from which the goods originate. This means that each of its items is strongly interrelated with an item of the European [CPA \(Classification of Products by Activity\)](#) and [NACE \(statistical classification of economic activities\)](#), which are themselves consistent with [CPC](#) and [ISIC](#), their counterparts at UN level. In addition, specific classifications – [ADN](#) (for inland waterways) and [ARN](#) (for road transport) - have been introduced for dangerous goods.

In transport statistics, the place of loading/unloading of the goods or the place of embarkation/disembarkation of passengers plays also an important role. This coding should be done according to the lists of administrative regions of each country. Member States of the European Union use the NUTS (Nomenclature of Territorial Units for Statistics).

It can also be useful to have information on the type of cargo. For this purpose, the classification of cargo types and the “[Codes for types of cargo, packages and packing materials, Recommendation 21](#)” were adopted by the United Nations Economic Commission for Europe.

Box V3.6.2: Data collections for transport statistics in the EU

Main legal acts on transport statistics

- Council Regulation (EC) N° 1172/98 on statistical returns in respect of carriage of goods by road;
- European Parliament and Council Regulation (EC) N° 91/2003 on rail transport statistics;
- European Parliament and Council Regulation (EC) N° 437/2003 on statistical returns in respect of carriage of passengers, freight and mail by air;
- Council Directive N° 95/64/EC on statistical returns in respect of carriage of goods and passengers by sea;
- European Parliament and Council Regulation (EC) N° 1365/2006 on statistics of goods transport by inland waterways.

Data collection on a voluntary basis

- Eurostat-ITF-UNECE Common Questionnaire;
- Eurostat REG Web questionnaire on regional transport.

V3.6.3. Sources of data

Transport statistics are obtained from various sources. Information related to infrastructure and means of transport are available from administrative sources (road administration, vehicle registers, etc.) Data on enterprises are obtained from structural business statistics and data on employment from the labour force survey.

Traffic, transport measurement and transport performance are obtained through specific data collections that need to be implemented by the competent national authorities. The following data providers have the source information that allows producing statistics on transport measurement for the different modes of transport:

- Road freight transport statistics: road transport enterprises;
- Rail transport: railways undertakings;
- Air: airports;
- Sea: maritime ports authorities;
- Inland waterways: inland waterways ports authorities.

For the collection of road passenger transport, traffic and transport performed are produced using a combination of different sources: household survey, passenger mobility survey, census on road traffic (traffic counts), odometer readings, energy statistics on fuel consumption.

Box V3.6.3: Creation of new statistical data collections

Developing countries might need to implement new data collections. The success of a new data collection is linked to a good collaboration with data providers. With this aim, the following actions can be taken:

- Involve all stakeholders: ministries, transport associations and enterprises, port and airport authorities
- Sign service level agreements for data exchange or memorandum of understanding with data providers
- Obtain access to administrative registers to get administrative data needed for transport statistics
- Organise workshops with all partners to define the statistics to be produced and organise the data collection
- Collaborate with managers of other surveys – household, LFS – to obtain information to be used to produce transport statistics (possibly new questions needed for transport statistics could be added to these surveys questionnaires)

A new data collection can be implemented according to the following steps:

- Institutional building
 - Achieve agreements with data providers
 - Implement tools to ensure access to data needed
- Development of methodologies for the production of requested statistics
 - Collection of documentation on best practices
 - Adaptation to the national specificities

Regarding the dissemination of transport statistics, various international organisations publish transport statistics for their member countries.

The [International Transport Forum \(ITF\)](#), an inter-governmental organisation within the OECD, publishes annual reports on transport statistics and provides free access to its database on transport statistics. Key indicators are available for 52 countries on: freight transport by rail, road, inland waterways and oil pipelines; passenger transport by rail and road; road accidents; infrastructure investments and maintenance.

The [International Road Federation \(IRF\)](#) publishes the annual “World Road Statistics”. This publication includes road and transport statistics for more than 185 countries, compiled from a large number of sources (including Eurostat). It comprises statistics on road networks, traffic, multimodal traffic comparisons, vehicles, accidents and road expenditures. In addition, it covers production, imports, first registrations and exports of motor vehicles as well as energy in connection with road traffic.

The [United Nations Economic Commission for Europe \(UNECE\)](#) disseminates transport statistics for 57 countries. Several indicators are available for the following domains: road traffic accidents; road traffic; road vehicle fleet; railways traffic; railway vehicles; railway employment; inland waterways traffic; inland waterways vessels; oil pipeline transport; transport infrastructure.

[Eurostat](#) publishes EU Member States transport statistics for rail, road, inland waterways, oil pipeline, maritime and air in its free dissemination database. For each of these domains, an exhaustive list of indicators is published: infrastructure; equipment; enterprises, economic performances and employment; traffic; transport measurement for goods and passengers; accidents.

NSI publish also on their website transport data for their country. For example, the [Bureau of Transportation Statistics \(BTS\)](#) provides very complete information on transport in the United States.

Box V3.6.4: Sources for African transport data

Sub-Saharan Africa Transport Policy Program

The [Sub-Saharan Africa Transport Policy Program \(SSATP\)](#) is a partnership of African countries, regional economic communities, African institutions, national and regional organizations as well as international development partners. These partners are all dedicated to ensuring that transport plays its full part in achieving poverty reduction, pro-poor growth, and regional integration in Sub-Saharan Africa.

One serious obstacle to the development of effective policy is the lack of reliable and accurate data on the transport sector. SSATP has addressed the lack of reliable transport data in the region and has supported the development of a common set of transport indicators. Since the launch in 2004, SSATP has been involved in 3 cycles of data collection, covering up to 21 countries. This initiative has helped countries build capacity in data collation, analysis and management in order to improve performance monitoring of the sector. Through the exercise, it has been possible to develop and agree on a minimum requirement for indicators for the transport sector. The indicators are accompanied by standard definitions and methodology for collection. Based on these experiences, SSATP develop guidelines for the establishment of efficient and sustainable Transport Sector Data Management Systems (TSDMS).

SSATP current work and priorities are described in the [SSATP Second Development Plan](#).

Africa Infrastructure Country Diagnostic

The Africa Infrastructure Country Diagnostic (AICD) project expands the knowledge of the physical infrastructure in Africa. It provides a baseline against which future improvements in infrastructures can be measured, making it possible to monitor the results achieved from donor support. It also provides a better empirical foundation for prioritizing investments and designing policy reforms in Africa's infrastructure sectors.

AICD collected detailed economic and technical data on infrastructure in 24 African countries. The project has produced a series of reports on public expenditure, spending needs, and sector performance in each of the main infrastructure sectors: energy, information and communication technologies, irrigation, transport, and water and sanitation. The main findings are summarised in the AICD flagship report [Africa's Infrastructure—A Time for Transformation](#), published by the World Bank in November 2009; the transport sectors (transport; roads; railways; ports and shipping; airports and air transport) are summarised in chapters 9 to 13.

The [AICD database](#) can be accessed online. It provides cross-country data on network infrastructure for, amongst others, air transport, ports, railways and roads. The database covers 24 countries (status as of November 2009). Phase 2 of AICD, which is underway, will cover most of the remaining countries; the data collected will be incorporated into the database.

The data gathered as part of AICD is being transferred to the African Development Bank (AfDB) for the development of an infrastructure database. This is in line with the efforts to merge all continental initiatives on infrastructure into the [Africa Infrastructure Knowledge Program \(AIKP\)](#) (2010).

V3.6.4. Analysing data quality and identifying problems

The quality of transport statistics depends on the data coverage, the harmonisation of the definitions and methodologies across the countries of a given region or sub-region, as well as their compliance with international recommendations and classifications. For example, in the EU, the adoption of legal acts for the provision of transport statistics was an important factor for the improvement of data quality in terms of data availability and comparability across Europe.

One way to identify problems is to look at asymmetries in transport reported by two reporting units (e.g. multi-country regions or sub-regions, individual countries, ports, airports, sub-national territorial units, etc.), one being the place of loading of the goods or embarkation of passengers and the other one the place of unloading of goods or disembarkation of passengers. This is in particular the case for maritime and air transport statistics where data for incoming and outgoing transport are available for each port / airport with the information of the origin and destination port / airport. Thus a country's transport can be examined through 'mirror' checking, which aims to identify the main discrepancies between the two sets of data, the reasons for their existence and to propose measures to reduce or eliminate these problems.

The short-term objective of mirror checks is to explain and assess the causes of discrepancies in transport statistics and hence to obtain datasets of better quality. Longer-term objectives may include harmonising the conceptual framework of two sets of statistics, which could lead to the use of new procedures in data compilation.

Box V3.6.5: Example: Mirror checks for air passenger transport statistics

In theory, the number of passengers arriving in a country's airports is the mirror image of the number of passengers leaving the airports of the countries of origin – the airport of origin can also be located in the same country as the airport of destination, it is then referred to as national transport. The same theory applies for the number of passengers leaving a country. In practice, there are often discrepancies between the two. Thus mirror checks are a systematic method of identifying problems in air transport data reported by a country. This can be applied to check the statistics produced by any country or multi-national region/sub-region.

The check is run both for national and international transport at airport level. The following formula is used for the calculation of the deviation for a given airport-to-airport route (for example transport between airport A located in country A and airport B located in country B):

$$\text{Deviation Mirror} = \frac{\left| \text{Pax country A} - \text{Pax Country B} \right|}{\left(\frac{\text{Pax country A} + \text{Pax Country B}}{2} \right)} \times 100$$

Pax country A = number of passengers arriving and leaving airport A to/from airport B, as reported by country A

Pax country B = number of passengers arriving and leaving airport A to/from airport B, as reported by country B

Studies have allowed defining thresholds for the detection of the abnormal deviation according to the size of the flow.

National transport of passengers

Data range	Thresholds over which data are suspicious
>= 2000 passengers	< 5000 passengers 100%
>= 5000 passengers	< 35000 passengers 10%
>= 35000 passengers	< 160000 passengers 2.5%
>= 160000 passengers	1.5%

International transport of passengers

Data range	Thresholds over which data are suspicious
>= 2000 passengers	< 5000 passengers 100%
>= 5000 passengers	< 15000 passengers 40%
>= 15000 passengers	< 65000 passengers 15%
>= 65000 passengers	5%

Time series analysis consists in the comparison of data collected over different time periods. If the comparison leads to significant variations between the time periods considered, the data under consideration could be considered as suspicious. Usually, the analysis of variation of yearly or quarterly data for consecutive years allows detecting the main problems in the transport data studied.

In the case of quarterly data, different types of analysis can be envisaged, for example checking the growth rate of road data between the following time periods:

- Variation of yearly data for two consecutive years;
- Variation of quarterly data (same quarter) for two consecutive years, for example Q1 2009 with Q1 2008;
- Variation of quarterly data between the four quarters of a year.

In order to implement a time series analysis, it is necessary to determine the threshold above which the variation in the compared data should be considered suspicious. Usual statistical methods can be used for the calculation of thresholds to be applied. The absolute variation between two time periods ($|(V2-V1)| / V1$) is then calculated for and the variations above the threshold are then considered as suspicious.

V3.6.5. Improving sector statistics

NSIs collect transport statistics from various sources. Thus it is very important to establish a good collaboration with data providers in order to obtain source data with good quality. This is typically the case for sea and air transport, where a good cooperation with airports and port authorities is necessary to get data for the transport occurring in airports and ports.

A formal service-level agreement or memorandum of understanding between the organisations involved is often necessary to align the interests of the two services. It could also be useful to organise workshops with the data providers in order to explain the statistical needs and the data to be provided. These meetings can be used to define an action plan, set up timetables and prepare recommendations on methodologies to be implemented.

Some of the transport data are obtained from administrative sources; in these cases it is also very important for the NSI to have a good cooperation or agreement with these institutions.

Employment data are obtained from labour force surveys; in this case it is necessary to have contacts with the persons responsible for the questionnaire in order to ensure that the questions will allow derivation of the data needed for transport statistics. This is also the case for the collection of road traffic data that might require adding specific question to the labour force surveys questionnaire.

For the creation of a new data collection, the following actions might be necessary: identification of sources; institutional building and development of methodology to compile the statistics to be produced.

It is also very important that the NSI implements basic credibility and consistency checks during the collection and preparation of transport statistics. This is a vital factor in the improvement of quality of transport statistics.

First, basic validation checks need to be implemented. They are used to check the format of a dataset, as well as codes of indicators, to ensure that values are positive, etc. Such tools are very useful to detect basic errors in the data, in particular coding mistakes and can be integrated in countries' IT systems used for data production. For example, Eurostat has developed such a tool, GENEDI, for the data validation.

Then consistency checks have to be implemented in countries' IT systems in order to check:

- Totals for breakdowns in each table (validation of data within a dataset);
- Coherence between different datasets: for example, variables appearing in different tables should have the same value;
- Plausibility of values: for example, distances need to be positive; weight of goods is linked to the load capacity of a lorry, etc.

Credibility and consistency checks allow detecting errors in the calculation procedures and help in assessing the coherence of data.

Box V3.6.6: Example: terms of reference for a collection of road traffic statistics

Detailed description of the action

In order to collect comparable and relevant road traffic statistics in vehicle-kilometres (Vkm) the following tasks are planned to be conducted in the framework of this project:

- Documentary work related to the data collection methods utilised by other countries in the region: data sources, frequency and methods of estimation and evaluation of the results
- Identification of data sources for road traffic variables
- Identification of appropriate statistical instruments in order to compile Vkm variables, according to the recommended methods, e.g. households surveys, odometer reading, fuel consumption, etc and definition of calculation methods
- Design of statistical survey
- Co-operation with the National Road company for compiling statistical data using the traffic counts
- Co-operation with administrative sources, e.g. Ministries for compiling data on vehicles' fleet
- Appropriate activities for corroborating statistical data collected from administrative sources, traffic counts and different statistical surveys in order to estimate trends and evaluate results

Expected results of the action

- Assessed and developed process for the collection of variables on road traffic statistics
- Appropriate data sources identified and mobilised for the production of Vkm indicators
- Co-operation with national organisations for development of actual data sources and procedures of compiling road traffic statistics;
- Statistical data collected and disseminated in national publications
- Statistical data provided to international organisations, according to the recommended methodology

Box V3.6.7: Example: Surveys of road freight transport

Statistics on road freight transport are obtained via sample surveys (in space and in time), collecting information from transport firms. As the total number of units in most countries is very large, sample surveys are carried out to collect information from a representative selection (sample) of this population. In this way, the desired attributes of a population can be estimated to a known precision according to standard statistical theory. EU Member States carry out quarterly sample surveys and record the road goods transport undertaken by vehicles registered in their country. Thus each reporting country reports all activities of a road motor vehicle inside and outside its national territory. Micro-data are obtained through questionnaires sent out by each reporting country to a sample of hauliers for vehicles registered in their country. These micro-data concern the vehicles themselves, their journeys and the goods that were transported. This section presents guidelines for the implementation of such surveys.

Sampling register used for the survey

Register: Register of road vehicles if available, else such a register needs to be created.

Organisation maintaining the register: Ministry of Transport, Ministry of Interior, Road administration, etc.

Frequency of access to draw the samples: The NSI needs to have an agreement with the organisation maintaining the register for its access. Access is needed at least once a quarter.

Arrangements for accessing the register: A replication of the statistical version of the register of road vehicles can be made for the NSI at least each quarter, in compliance with the agreement between the NSI and the organisation maintaining the register. Before each quarterly sampling, the register of motor vehicles can be matched with the Business Register to obtain information on activity and address for owners and users of vehicles – if this information is not available in the road vehicles register.

Information obtained from registers:

Register of Motor Vehicles: identifier of the owner/user, type of ownership, registration number, type of vehicle, body type, load capacity, maximum permissible laden weight, number of axles, date of first registration, date of first registration in the country, type of fuel used, etc.
Business Register: Main activity of the operator, name of the owner/user, address of the owner/user.

Example of procedure for reminders:

First reminder – 4 weeks after the surveyed week

Second reminder – 7 weeks after the surveyed week, with a new copy of the questionnaire sent out

Third reminder - telephone call to key respondents 1 week after the second reminder.

Penalties procedures might be launched.

Sampling methodology

Statistical unit: Goods road transport vehicle or the transport enterprise.

Special types of units can be excluded: Agricultural, military and public service vehicles and special purposes vehicles. Vehicles with load capacity below 3.5 tonnes or maximum permissible laden weight below 6 tonnes might be excluded from the survey: light vehicles represent a high proportion of vehicles, but represent a very small share of tonnes carried. Therefore, excluding them from the survey reduces the costs of the survey without losing much information.

Time unit: at least half a week; 1 week is recommended

Stratification: Many variables can be used to stratify the survey. The most efficient ones are: Load capacity; country's regions; type of transport (own account or hire or reward); type of body; year of first registration or age of vehicle; type of ownership; type of licence; etc.

Calculation of weighting factors:

In the cases of a survey carried out over 1 week and for all 13 weeks of a quarter, :

$$\text{Weighting factor} = 13 * \frac{N}{S}$$

N = Number of vehicles in the register (in a stratum)

S = Number of questionnaires used in analysis

Quality aspects

Several indicators are used to measure the quality of road freight surveys: register quality; non-response rate, standard error. These indicators allow to identify the weaknesses of the survey and thus to take actions for the improvement of their quality.

To find out more...

Data sources

- Eurostat's free dissemination database – Transport statistics
- International Transport Forum (ITF)
- Africa Infrastructure Country Diagnostic (AICD) database
- Sub-Saharan Africa Transport Policy Program (SSATP)
- United Nations Economic Commission for Europe (UNECE)
- DG Mobility and Transport (MOVE)
- International Road Federation (IRF)
- US Bureau of Transportation Statistics (BTS)

Metadata

- Glossary of transport statistics
- Eurostat website – transport page

Classifications registries

- Eurostat RAMON metadata server
- UN Classifications registry

V3.7

Income and consumption statistics



V3.7. Income and consumption statistics

The chapter in brief

Income and consumption statistics tell how people earn and use their money. Though the concept could be put that simple it should not disguise the complexity of the process necessary to collect information on or monitor household income and consumption.

From the income side, these statistics include simple concept like salary or regular pays to individuals. It is intuitive that payroll and light household surveys could be used to collect this information. But they also cover statistics on transfers received and paid from/to other households, government at central and sub-national levels, or nongovernmental organisation such as Non Profit Institutions Serving Household. Accuracy of these data requires specific instruments for their collection and validation.

Within the borderlines between income and consumption analysis these statistics are more elaborate indicators on income/expenditure-based measures of poverty, consumer protection, and household consumption patterns. They inform policy makers on social distribution of economic wealth of a country. For their comparability over time and space, main issues in these areas are definition, methodology and consistency.

From the consumption side emphasis is put in this chapter on how households acquire and consume goods and durables. The chapter finally presents statistical measures of the gap between income and consumption. That is household wealth when there are leftover resources after consumption and debts otherwise.

Beyond the conceptual framework for collecting statistics on household income and consumption, this guide presents available data sources, addresses data quality issues and provides ways and means to improve income and consumption statistics. Chapter V2.2 of this Guide covers the related topic of living conditions and poverty.

From purely conceptual point of views, statistics on household income can be approached from the standpoint of its use for policy analysis as the best proxy for economic well-being of individuals and households. That is in terms of those receipts that contribute to economic well-being of individuals by increasing their potential to consume or to save. Emphasis is then on those receipts that individuals consider as being of direct benefit to themselves as well as on the distribution of income across households.

A different perspective is from the aggregated macroeconomic level, e.g. within the system of national accounts where the total income accruing to households is described in relation to other aggregate components of this system. ⁽⁷²⁾

While undoubtedly there are several overlaps between these two perspectives, there are nevertheless important differences arising from their different objectives and methodologies. Users of statistics, especially decision makers are invited to bear these differences in mind while acting in light of income and consumption statistics.

Whatever the perspective, trends in economic analysis show that developing countries are often characterized by uneven distribution of income within the country and generally fairly low average income levels compare to others. For example, empirical data from a case of Philippines indicated that distribution of income and consumption by families in the country appeared to be stably unequal over a generation. ⁽⁷³⁾

V3.7.1. Policy applications: what this data is used for

Decision makers at all levels, whether national, regional or international, need information on their people well-being. They use it to address issues related to economic and social conditions, and shape the future of communities. More specifically, for policy formulation and evaluation purposes, statistics on income and consumption inform on the magnitude and structure of household resources and expenditures.

Consumption expenditure statistics are necessary for monitoring and evaluation of national policies related to poverty alleviation and effectiveness of household related information system, business orientation and wealth distribution. They are the base for measuring inflation in economies and estimating purchasing power of national currencies. Household consumption expenditures give important signals on future trends in economic opportunities in a country.

V3.7.2. Concepts and definitions

This guide retains the definition of the [Canberra Group](#) for which income includes all payments received by individuals as a result of their current or former involvement in paid economic activity or self-employment. Conceptually three principles usually discussed in connection with the definition of income for a specified reference period are:

1. Receipts should be expected to recur regularly to be considered as "income";
2. To be considered as "income", receipts should contribute to current economic well-being – Receipts deferred for future uses are savings or investment;
3. Receipts arising from a reduction in net worth should be excluded from the concept of income. ⁽⁷⁴⁾

In another concept from an economic theory referred to as the Haig-Simons', income is defined as the sum of consumption expenditure and change in net worth in a period.

⁽⁷²⁾ Reference: [1993 System of National Accounts \(1993 SNA\)](#)

⁽⁷³⁾ As reported in a study by Albert Berry from University of Toronto, Canada entitled [Income and Consumption distribution trends in the Philippines, 1950 – 1970](#).

⁽⁷⁴⁾ Cf. ILO Report II of the Seventeenth International Conference of Labour Statisticians held in Geneva, 24 November-3 December 2003 on [Household income and expenditure statistics](#).

The **System of National Accounts (SNA)** has recommendations on the definition of income for use in preparing national accounts (see chapter V 3.1. for more information on national accounts). In the **1993 SNA** version, the proposed definition of disposable income is *“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”*.

The **Eurostat manual on income measurement** adopts the definition of income proposed in the Canberra Report: *“In broad terms, income refers to regular receipts. ... Large and irregular receipts from inheritances and the like are considered to be capital transfers because it is unlikely that they will be spent immediately on receipt and are ‘one-off’ on nature.”*

The **Organisation for Economic Co-operation and Development (OECD)** considers household consumption as the use of personal or family income and revenue from investment and pecuniary activities. In a more practical way, from household perspective, the income concept refers to the one of **equivalent disposable household income** per individual. The income unit is the household, defined as a group of persons sharing a set of common resources. Incomes are recorded on an annual basis and all possible types of cash income have been grouped into four categories:

4. Gross earnings: the salary income of the household from dependent employment (excluding employers' contributions to social security, but including sick pay paid by social security).
5. Gross capital and self-employment incomes: financial gains, real estate rents, occupational pensions and all kinds of private transfers as well as self-employment incomes (but not including imputed income from owner occupation).
6. Social security transfers: all kinds of cash transfers from public sources.
7. Taxes: direct income taxes and employee social security contributions paid by households.

Household disposable income is defined as total market income (i + ii) plus transfers from general government (iii), less income taxes and social security contributions (iv). In the next paragraphs of this chapter we will provide detailed definition on these concepts at macro and household economics levels.

V3.7.2.1 GROSS DOMESTIC PRODUCT, INCOME AND EXPENDITURE APPROACH

In macroeconomics perspectives the size of the economy can be estimated in many different ways. The two most popular methods for the computation of the Gross Domestic Product (GDP) are the Aggregate Expenditures Approach and the National Income Approach.

The Expenditures approach measures national output (GDP) indirectly by estimating how the GDP is purchased. As such the major purchasers of goods and services are: households,

businesses who buy capital goods and equipment, government, and the world economy.

Households buy final goods and services, and these purchases are categorized as consumer purchases. Businesses buy many intermediate goods and services to make the final goods and services that households, government, other businesses, and the world economy buy. This is intermediate consumption (C).

Many of those intermediate goods and services become part of the final product or services and are not included as separate purchases. The only exceptions are those purchases related to capital goods and equipment which do not become part of the final product. For this reason, a separate category measured in the expenditures is capital and equipment purchases, otherwise known as business investment (I). The public sector purchases final goods and services as part of Government consumption (G).

Finally, goods and services sold to foreigners, or exports (X), as well as goods and services bought from foreigners (Import or M), are included in the expenditures measure of GDP as net exports, i.e., exports minus imports, X-M. Adding up these spending components yields aggregate expenditure or GDP. Therefore, the following equation gives an estimate of GDP using the expenditures approach:

$$\mathbf{GDP = C + I + G + (X - M)}$$

An alternative approach, the income approach, measures GDP by adding up the different types of income that are generated in the GDP production process. To measure GDP in this manner the following categories are added up: Wages and Salaries, Net interest (interest received minus interest paid), Rental income, Proprietor's Income, and Corporate Profits.

The sum of these five categories, known as Net Domestic Product at Factor Cost, does not yet give GDP. To arrive at GDP from this sum requires the addition of two other elements that, while included in the expenditures approach, are not included in any of the five income categories. Those two elements are: indirect business taxes (which can be thought of as sales taxes) and depreciation.

In developing economies and in most industrialized countries, households are the core part of the economy as they contribute to the most extent to the formation of the above equation either by their revenues or their purchases known as individual consumption.

Though it is important to know about the magnitude of income in a country – usually through GDP, the structure of income (income distribution) says who earns what. Description of the **Family Income and Expenditure Survey (FIES)** conducted in the Philippines and the **1-2-3 survey system** in selected African countries is presented in this chapter. The reference for income and consumption statistics in the European Union is the Statistics on Income and Living Conditions known as EU-SILC (see Box V3.7.1 below).

Box V3.7.1: Selection of household income and expenditure surveys**1. The 1-2-3 Survey System**

The 1-2-3-type mixed surveys system is used in order to achieve two objectives, one with macroeconomic and the other with microeconomic perspective: 1. It provides interesting information to both economic modellers and national accountants concerned with defining a good method for including the informal sector in national accounts. This objective is achieved by measuring employment and informal production together with consumption of goods and services provided by the informal sector; 2. It describes the conditions under which informal activities are carried out, thus making it easier to devise policies in support of small or micro-enterprises as part of national or international projects. This analysis also makes it possible to relate this informal activity with poverty analysis.

Three types of modules are used to achieve these two objectives. They are distributed one after the other to households living in the area being studied:

- the first module measures employment, stating whether it is formal or informal;
- the second module measures production generated by the informal activities which were detected during the first stage;
- the third module analyses household consumption in relation to its origin and once again makes a distinction between demand on the informal sector and demand on the modern (or formal) sector .

Results of 1-2-3 Surveys (LFS, informal sector, consumption and poverty) are available for selected African countries. In the case of Madagascar 1-2-3 surveys were conducted between 1995-2004, covering capital, urban (2000, 2001), and rural areas. In West Africa 2001/2003, these surveys were conducted in 7 West African Economic and Monetary Union capital cities (Herrera, Razafindrakoto and Roubaud (2008) and the *African Statistical Journal* vol. 9 (2009)).

2. The European Union Statistics on Income and Living Conditions (EU-SILC)

The European Union *Statistics on Income and Living Conditions (EU-SILC)* is an instrument aiming at collecting timely and comparable cross-sectional and longitudinal multidimensional microdata on income, poverty, social exclusion and living conditions. This instrument is anchored in the European Statistical System (ESS). The EU-SILC project was launched in 2003 on the basis of a 'gentleman's agreement'; it covers the EU Member States, the EFTA countries (except Lichtenstein), and is being expanded to also cover EU candidate countries.

The instrument aims to provide two types of data:

- Cross-sectional data pertaining to a given time or a certain time period with variables on income, poverty, social exclusion and other living conditions, and
- Longitudinal data pertaining to individual-level changes over time, observed periodically over, typically, a four year period.

3. The Family Income and Expenditure Survey (FIES) - Philippines

The *Family Income and Expenditure Survey (FIES)* is a nationwide survey of households undertaken every three years by the National Statistics Office (NSO) of Philippines. It is the main source of data on family income and expenditure in the country, which include among others, levels of consumption by item of expenditure as well as sources of income in cash and in kind. The results of FIES provide information on the levels of living and disparities in income of Filipino families, as well as their spending patterns. It covers the whole country and follows a national multi-stage stratified random sampling methodology. The FIES is a sample survey designed to provide income and expenditure data that are representative of the country and its 17 regions. The last FIES was conducted in 2009.

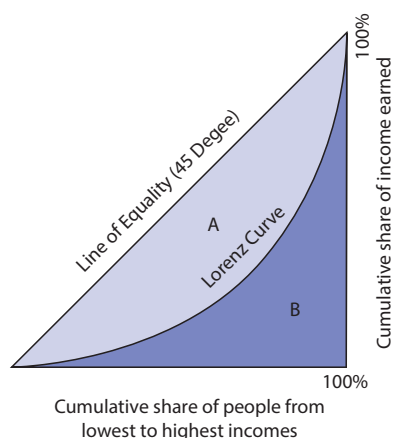
V3.7.2.2. INCOME DISTRIBUTION

Income distribution measures the gap between the various strata of the population. On the extremes let us suppose that in a country everyone has the same (or approximately) income. This would be a situation where any proportion of the population (say x%) would have (approximately) the same x% of the wealth. The country would have an even income distribution.

On the contrary in case one person (or very few people) has the whole (or almost) wealth of the country. We consider this as an uneven income distribution. In a very uneven income distribution, the rich are very rich and the poor are very poor, comparatively. The most used statistical tool for assessing the shape of income distribution in a country is the Gini Coefficient. What is Gini coefficient?

Gini index or Gini coefficient is an economic measure of inequality in income distribution. On a scale of 0 to 1, the lower the Gini coefficient, the more evenly distributed the wealth. The coefficient is named after its inventor, the Italian statistician Corrado Gini. How is the Gini coefficient calculated?

Gini coefficient is calculated from the Lorenz curve, in which cumulative family income is plotted against the number of families arranged from the poorest to the richest. The index is the ratio of the area between a country's Lorenz curve (A) and the 45 degree helping line to the entire triangular area (A + B) under the 45 degree line. Using the graph below $G = A/(A+B)$ – See graph below.



The more unequal a country's income distribution, the farther its Lorenz curve from the 45 degree line and the higher its Gini index. For example, Sub-Saharan countries typically have an index of around 40 to 60. The more nearly equal a country's income distribution, the closer its Lorenz curve to the 45 degree line and the lower its Gini index. As an example, the EU countries with the lowest values of the Gini index – below or about 25 – are Slovenia, Hungary, Slovakia, Sweden and the Czech Republic.

If income were distributed with perfect equality, the Lorenz curve would coincide with the 45 degree line and the index would be zero; if income were distributed with perfect inequality, the Lorenz curve would coincide with the horizontal axis and the right vertical axis and the index would be 100. In practice people mostly receive their income in cash but often this happens in kind.

3.7.2.3 IN-KIND INCOME

In-kind income is income that is not in the form of cash or negotiable instruments. Examples of in-kind income include real property, food, and occasionally, wages (e.g., room and board or clothing as compensation for employment) ⁽⁷⁵⁾. The United Nations Statistics Division defines **in-kind income** as individual goods and services provided as transfers (see next section) in kind to individual households by government units (including social security funds) and Non Profit Institutions Serving Households (NPISHs), whether purchased on the market or produced as non-market output by government units or NPISHs. They may be financed out of taxation, other government income or social security contributions, or out of donations and property income in the case of NPISHs.

V3.7.2.4 INCOME TRANSFERS

Income transfers are cash disbursements made by government or non-governmental organizations to individuals or households identified as highly vulnerable, with the objective of alleviating poverty or reducing vulnerability. Income transfers are payments to individuals for which no current goods or services are exchanged. This is the case of social security and unemployment benefits.

Depending on the country the details of income transfer may vary. Social security covers pension payments but also early retirement benefits. Public transfer administrations pay supplements to individuals temporarily inactive due to unexpected leaves or study, inability to pay specific services such as rent, survival utility bills and care for children and young persons. Education aids from public funds are exceptional forms of income transfers from public administrations to households. They take the form of cash pays or indirect transfers such as reduction on tuition and/or school supplies.

Moreover private transfer income includes received presents and winnings, payments from insurances, as well as payments from private pension schemes and received child maintenance and alimony. Besides these types of more current income transfers, households may receive capital transfers, such as inheritance. In low-income economies remittance are increasingly participating in the formation of income transfer between households either from urban to rural areas or from the citizens abroad to domestic families.

⁽⁷⁵⁾ United States of America Social Security Handbook 2009 Section 2140

V3.7.2.5 MEASURES OF POVERTY

Measuring poverty is one of the most challenging areas of income and consumption statistics due to the existence of mainly two different concepts of poverty (see chapter V2.2. for more details). Two important notions are taken into consideration for the determination of the poverty status of a household: absolute and relative poverty.

Absolute poverty is a level of poverty at which certain minimum standards of living - for example nutrition, health and shelter - cannot be met. It is internationally admitted that people living in this condition earn less than \$1 per person per day. This threshold was recently re-evaluated to \$1.25 a day per person as the initial value tends to underestimate the number of poor people actually living below the poverty line in some countries. Depending on the expected impact some countries and organization push the threshold to 2 dollars a day.

The term "Absolute poverty" may be slightly misleading, since there is no "absolute" standard that defines absolute poverty: the level of income necessary for these minimum standards is often referred to as poverty line, which various institutions and individuals define differently. Absolute poverty can be contrasted with relative poverty which is a low income or standard of living relative to the rest of society.

Relative poverty is a poverty measure based on a low disposable income relative to the rest of society. Unlike absolute poverty, it does not necessarily imply that physical human necessities of nutrition, health and shelter cannot be met; instead it suggests that the lack of access to many of the goods and services expected by the rest of the contemporary society leads to social exclusion and damaging results for the individuals and families in relative poverty.

One of the consequences of using relative poverty to judge societies over time is that the poverty line tends to rise as incomes rise. This is desirable if it reflects a changing social consensus about minimum acceptable standards of living.

However, it is less desirable if it leads to social and economic policies which give such an emphasis to reducing inequality that the cost includes keeping the incomes of the poorest at a lower level than they might have been, had an absolute poverty measure been used to guide policy. It is a common take that rich and poor people do not spend their income the same way. What are the differences in consumption patterns between two counties?

V3.7.2.6 CONSUMPTION PATTERNS

The consumption patterns of households determine the relative importance (weight) of household monetary expenditure attached to each category of goods and services covered by the Consumer Prices Index, a key measure of inflation. Mainly, consumption pattern is the key for distribution of the effects of economic shocks such as price change or increase in wealth (income).

However, there is no uniform basket which applies to all countries/economies. The structure of the weights may vary considerably from country to country, as well as between the Consumer Price Index for an individual country over time. This makes the study of consumption pattern a rather sophisticated exercise. For more accurate analysis of consumption pattern, especially in developing countries, it is suggested to reduce the number of categories at the first stage. For instance, simple structures like food vs. non-food analysis are more accurate than the usual international analysis of decomposition of household expenditures according to six or more categories (e.g. United Nations' [Classification Of Individual Consumption by Purpose \(COICOP\)](#)).

In the European Union, benchmarking studies have been conducted with three categories: 1. Food; 2. All items except Food and Transport; and 3. Transport. [The HICP - Household consumption by purpose](#) is a reference show case. For this guide individual buy goods for immediate but also for long term use. The last are durables.

V3.7.2.7 CONSUMER GOODS AND DURABLES

Household durables goods are products that are not purchased frequently. Under normal circumstances consumer durables can be used for more than a year. Furthermore the purchase price for the consumer good accounts for a significant amount of money. Examples of durables are appliances, home furnishings, lawn and garden equipment, consumer electronics, toys, small tool, sporting goods, photographic equipment, and jewellery. When the national statistical infrastructure allows, it is recommended to fine-tune the definition to at least two or three sub categories.

In this context household durables are goods that last longer in consumer use. Durables include, inter alia, motor vehicles, furniture, cookers, fridges, washing machines, television sets, musical equipment, computer equipment, watches and jewellery. Semi-durables' life time is rather short and this category includes clothing, footwear, household utensils, equipment for sport and books. Other non-durables consumer goods include food, beverages, tobacco, pharmaceutical products, petrol, cosmetics, newspapers etc.

The stock of consumer durables does not contribute to the national wealth, since the value of consumer durables is a satellite account. This is a consequence of the structure of the national accounts system, where households' acquisitions of consumer durables are considered as private consumption and not as an investment. Therefore durables purchased by household as capital goods do not count in this category. It is a National Accounts requirement to differentiate private consumption of goods and durables from investment which goes to family owned business account.

As seen above households and individuals earn income from various sources and consume different goods and services. The difference between income and consumption expenditure is known as wealth is positive and debt otherwise.

V3.7.2.8 HOUSEHOLD WEALTH AND DEBTS

Household wealth is defined as the total market value of dwellings, consumer durable goods and financial asset net of debt. In practice, total household wealth is the sum of savings and checking accounts, bonds, stocks, individual retirement accounts, vehicles, market value of housing equity and other real estate, minus all current debt individually and/or collectively contracted by members of the household. In the notion of household wealth, the distinction between financial and non financial asset is essential. The fact that non financial assets are valued at their market price valuation impacts on the determination of the total wealth.

Ideally the main source of information on household wealth should be private banks. But due to confidentiality binding banks on consumer information, National Statistical Institutes generally use surveys to collect information about household wealth and the debts. In poor statistical systems lack of information makes it difficult to get accurate data on wealth as respondents may think information collected from them will be used for tax purposes. The general tendency therefore is for households to underestimate the amount of their asset. The next section of this chapter deals with important factors in the valuation of household income and consumption components.

V3.7.2.9 INFLATION AND PRICE LEVEL INDICES

Focusing on household consumption expenditures, two types of statistical indicators are used to assess how the wealth of consumers varies over time and space. Inflation formulates how much money is needed to purchase the same amount of goods or services from one year to the other while purchasing power tells the price of the same good in one country relatively to another one. Consumer Prices Indices (CPI) general measures of inflation while price levels differences between two or more countries are measured by a Price Level Index (see also chapter V3.3. on price statistics).

All countries in the Euro zone and their partners in OECD and outside have a well established Consumer Price Index. Some regions are participating in Harmonized Consumer Price Indexes making CPI numbers comparable across countries. As regards the measure of price level indices several methods are available including the use of official national currency exchange rate to Euro or United States Dollar. But the most robust measure of price level indexes between countries is provided by the [International Comparison Programme](#) with the notion of [Purchasing Power Parities](#).

Box V3.7.2: Do we underestimate household income in poverty context?

In order to have a better estimate of what households make a year it is better to measure its consumption rather than capturing its income. Consumption captures permanent income, reflects the insurance value of government programs and credit markets, better accommodates illegal activity and price changes. Consumption is more likely to reflect private and government transfers. However, it is fairly compelling that most households can more easily report income.

Research in the area of income and consumption statistics shows that income is systematically under-reported and measured with substantial error ⁽⁷⁶⁾. These problems are especially severe for those households with few resources. It is therefore recommended to use consumption to supplement income in analyses of poverty whenever possible.

Monitoring household consumption is a challenging endeavour. Existing international initiatives such as the household budget surveys any various standards of living surveys open the ground for more accurate estimates of consumption estimates.

⁽⁷⁶⁾ 'Measuring the Well-Being of the Poor Using Income and Consumption' by Bruce D. Meyer, Northwestern University and NBER and James X. Sullivan, Northwestern University, May 2002.

V3.7.3. Sources of data and metadata

The primary sources of data on household income and consumption are national surveys of living standards. EUROSTAT collects across EU Member States harmonised data on living conditions (EU-SILC, see chapter V2.2) and of household budget surveys. Part of structural income and consumption expenditure statistics are available in population and housing census. Statistics about the level of income or consumption come from National Accounts. It is commonly admitted that data from sample surveys cannot be used at a broad level of disaggregation. At the same time census data are generally not a good source of data on household income. A trade-off is necessary to determine which available indicators should be used when assessing household income and consumption.

Metadata are available from international organizations such as the United Nations International Labour Organization, the Organisation for Economic Co-operation and Development, the European Union, etc. The Eurostat [Household consumption by purpose](#) web site gives an interesting oversight of individual components of household consumption expenditure, their variation among European Union Member States, reasons for statistical discrepancies, and factors affecting spending and saving habits in the Union. The OECD Statistics portal provides definition of key concepts on household income, consumption and [savings](#) for member economies. [International Financial Statistics \(IFS\)](#) of the International Monetary Fund defines economic concept of Household Consumption Expenditure including Non Profit Institutions Serving Households (NPISHs) while the [United Nations Statistics Division](#) centralizes metadata on the general framework for assessing household income and consumption statistics as part of [Sustainable Data Goals indicators](#) (see section B.1.1. and section B.4.1.). The international reference organization on household statistics including income, consumption and price levels is the United Nations International Labour Organization with its [ILOSTAT Database](#).

Box V3.7.3: Selected international datasets related to Household Income and Consumption

ILOSTAT

ILOSTAT is a database of labour statistics. It covers official core labour statistics and estimates for over 200 countries since 1969. It also provides methodological descriptions of main national statistical sources. ILOSTAT is an initiative of the International Labour Organization Office (ILO).

OECD Statistics (StatExtracts)

OECD.StatExtracts is an integrated database system. It was developed for the use of member countries but also includes major aggregates from selected non-member countries. It has interesting features such as creating and customizing tables, reshaping table using “pivot dimensions” to move rows and columns. It also has export functions to download data in Excel or CSV formats. User can print query or save them for later use.

World Bank. Data and Statistics

The World Bank [Open Data initiative](#) forms a platform for sound policy making around the world. The mission of the World Bank’s Data Group is to provide high quality national and international statistics to clients within and outside the Bank and to improve the capacity of member countries to produce and use statistical information. As part of the international statistical system, the Data Group works with other organizations on new statistical methods, data collection activities, and statistical capacity-building programs. This group also coordinates the analytical and statistical work related to monitoring progress towards the [Sustainable Development Goals](#) (see section B.1.1. and section B.4.1.). The [World Development Indicators \(WDI\)](#) provides a comprehensive selection of economic, social and environmental indicators, drawing on data from the World Bank and more than 30 partner agencies. The database covers more than 900 indicators for 210 economies with data back to 1960.

Eurostat statistical publications

Eurostat is the statistical office of the European Union. Its task is to provide the European Union with statistics at European level that enable comparisons between countries and regions. Featured publications include The EU economic data pocketbook and the Eurostat labour market statistics pocket book.

The EU economic data pocketbook is a handy collection of economic data from different domains, covering the European Aggregates, EU Member States and its main economic partners. The publication focuses on the structural aspects of the EU economy; consequently, most of the data are annual, complemented by selected monthly and quarterly indicators.

The Eurostat labour market statistics pocket book aims to highlight various aspects of the labour markets in Europe. The statistics shown refer to the labour market situation of individuals and households, their gross and net earnings as well as the labour cost incurred by enterprises, to labour demand, and labour market policy interventions.

IMF Data and Statistics

The **IMF** publishes a range of time series data on IMF lending, exchange rates and other economic and financial indicators including GDP expenditures. Manuals, guides, and other material on statistical practices at the IMF, in member countries, and of the statistical community at large are also available.

These are also important sources of metadata on household income and consumption

V3.7.4. Analysing data quality and identifying problems

Data quality issues should be looked at from different perspectives which may vary from one country to the other. (See chapter C.5.3. for general aspects of statistical quality.) For example a [United States experience](#) highlights non response in national census as an issue whether on statistical units or on items surveyed. International researches also show that in many countries, underreporting is disproportionately high for three types of income: government transfers, property income, and self-employment income. Since transfers are more likely to be received by people in the lower tail of the income distribution, this underreporting would increase measured poverty. On the other hand, underreporting of property income tends to lower the income of households at the top of the distribution, leaving poverty unaffected. Underreporting of self-employment income can result in too many individuals with low incomes, or even negative incomes, also affecting the measure of poverty rate.

As regards household surveys in general, fundamentally, there are two types of errors inherent in sample survey data, mainly, non-sampling errors and sampling errors. The reliability of survey estimates depends on the combined impact of non-sampling and sampling errors. A practical example of data quality indicators in relation with household income and consumption is available in [Data quality in the 2004 Survey of Labour and Income Dynamics \(SLID\)](#) disseminated by Statistics Canada.

V3.7.5. Improving household statistics

Population and household statistics are of interest to international organizations but also to central and local government, especially in the context of governance and decentralization in developing countries. Improving relevance, accuracy and timeliness of household statistics will bring them to the standard needed to meet the needs of users. Many means can be used to improve household income survey estimates.

Developing international standards for household surveys is a major task to enhance comparability of data collected on income and consumption. An important international achievement is the establishment of the [International Household Survey Network](#) as a follow-up of recommendations on the implementation of the Marrakech Action Plan for Statistics. In addition, it is necessary to create experts discussion groups to share experience and best practices on issues of improving household statistics at both national and international levels. Examples of such initiatives are the UN backed [Rio Experts Group](#) on poverty statistics and the [Canberra Group on household income statistics](#).

National or regional workshops should be encouraged to discuss survey methodologies, questionnaire design, data processing and analysis. But moreover elaboration of household survey guides and standards are critical to ensuring robustness of income and consumption statistics. Implementation agencies should encourage pilot surveys in order to reduce data issues at the end of household income surveys while international organizations must provide necessary technical assistance where needed to enhance the quality of data collected on household income and consumption.

To find out more...**Major Statistics Programs Related to Income and Consumption Statistics**

- World Bank: [Open Data initiative](#)
- United Nations: [Data portal](#)
- World Bank: [International Comparison Program \(ICP\)](#)
- International Labour Organization: [Statistical Databases](#)

GDP Measure, Output, Income and Expenditure approaches

- World Bank Open Data initiative: [GDP \(current US\\$\)](#)
- International Monetary Fund: [World Economic Outlook \(WEO\) Databases](#)
- OECD: [Gross Domestic Product \(GDP\) Estimates](#)
- [System of National Accounts](#)

Methodological Research Papers

- [Income Distribution and Poverty in the OECD Area: Trends And Driving Forces](#), Michael Förster and Mark Pearson, Christian Dreger & Hans-Eggert Reimers, OECD Economic Studies No. 34, 2002/I October 2006
- [Consumption and disposable income in the EU countries: the role of wealth effects](#), Christian Dreger & Hans-Eggert Reimers, October 2006
- [Household Consumption, Household Incomes and Living Standards](#), A review of related recent research activities, Heinz-Herbert Noll (GESIS-ZUMA), Mannheim, 2007
- [Survey data on household finance and consumption - research summary and policy use](#), The Eurosystem Household Finance and Consumption Network, [European Central Bank](#), Occasional Paper Series, January 2009
- [African Statistical Journal Vol. 9](#), November 2009
- [UNESCAP Informal Sector website with reference materials](#)
- UEMOA: [Harmonised Index of Consumer Prices \(L'Indice Harmonisé des Prix à la Consommation \(IHPC\)\)](#)
- [UNECE web site](#)
- [International Household Survey Network](#)

International Data Sources

- International Labour Organization: [Labour Statistics \(ILOSTAT\)](#)
- International Monetary Fund: [General Data Dissemination System \(GDDS: Consumer Price Indices\)](#)
- United Nations Statistics Division: [Distribution of income and consumption](#)
- Eurostat: [PPP Program](#)
- Eurostat: [Household Consumption expenditure](#)
- OECD Statistics Department: [OECD.Stat Extracts](#)
- World Bank: [World Development Indicators – Income Distribution for poverty analysis](#)
- World Bank: [Consumption and welfare aggregates](#)
- World Bank: [Gross National Income concept \(GNI, Atlas method, current US\\$\)](#)

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Guide to statistics in European Commission development cooperation 2021 edition

VOLUME 3: ECONOMIC STATISTICS

The “Guide to statistics in European Commission development cooperation” provides extensive information on statistics in development cooperation, presenting key international initiatives supporting developing countries in building sustainable statistical systems that produce quality statistics. This new edition of the Guide is updated with information on key developments, including the Sustainable Development Goals and the SDG indicators framework, the UN World Data Forum and other significant initiatives.

The Guide explains the ‘statistical machinery’, covering the organisation, functioning and products of national statistical systems, as well as key international quality frameworks and principles. It presents tools for assessing statistical systems, strategic plans for developing statistical institutions, management of national projects/programmes in the field of statistics, training, as well as different aspects of statistical capacity building.

It presents a summary of EU support to statistics, including issues such as requests for support to statistical capacity building, indicators to feed result-based management tools, monitoring development partnerships or assessing the performance of policies and interventions.

The Guide can be used to identify and develop actions to support statistics and statistical indicators to define and follow-up cooperation programmes, including sector policies. It provides insight into the statistics in a wide range of specific sectors, from agriculture to social statistics, from sustainable development indicators to business statistics. This new edition of the Guide groups the previous sector chapters into four new thematic volumes on: the Sustainable Development Goals and indicators; Social statistics; Economic statistics (will be updated at a later stage); Environment and climate change.

Finally, it should be noted that this is the fifth edition of the Guide, the previous editions being done in 2011, 2012, 2013 and 2017.

For more information

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