



# International Comparison Program

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## **ICP Quality Assurance Framework**

**Global Office**

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## ICP QUALITY ASSURANCE FRAMEWORK

### INTRODUCTION

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#### **International Comparison Program**

1. The International Comparison Program (ICP) started as a modest research project of the University of Pennsylvania and the United Nations Statistical Office in the late 1960s. It is now a worldwide statistical operation managed by the ICP Global Office (GO) located in the World Bank in Washington. It collects detailed price and expenditure data with which to calculate purchasing power parities (PPPs) for participating countries. The PPPs are used to produce internationally comparable price and volume measures for gross domestic product (GDP) and its component expenditures, such as private consumption, government consumption and investment. The price measures reflect the differences in price levels between countries and the volume measures make it possible to compare the output of countries and the welfare of their inhabitants in real terms. To collect the price and expenditure data required to calculate PPPs, the ICP holds a round of surveys every five or six years. The surveys cover the whole range of final goods and services comprising GDP: consumer goods and services, government services and capital goods.

2. The last round of surveys was in 2005. This was the largest round to date covering 146 countries. These included countries from the five ICP geographical regions - Africa, Asia and the Pacific, Commonwealth of Independent States, Latin America, and Western Asia - as well as the countries that participate in the PPP program managed by the Statistical Office of the European Communities (Eurostat) and the Organisation for Economic Cooperation and Development (OECD). Responsibility for the ICP within regions was shared between national coordinators (NCs) and regional coordinators (RCs). National coordinating agencies (NCAs), usually the national statistical agencies of participating countries, carried out data collection and data validation. Regional coordinating agencies (RCAs), usually a regional organization such as the Asian Development Bank (ADB) for the Asia and Pacific region, provided methodological guidance and coordinated data collection and data validation. They also put together and finalized the regional comparisons as well as publishing the results of the comparisons. Responsibility for ensuring that common methodology, standards and procedures were followed by regions rested with the GO. It was also responsible for ensuring that the regional comparisons could be combined in a world comparison and for combining them. The GO published final results for the world comparison in July 2008. They included imputed PPPs and volume measures for 39 countries that did not participate in the comparison. The next round of surveys is scheduled for 2011.

## **Improving quality**

3. To improve the quality of the ICP data in the 2005 round, much effort went into harmonizing and standardizing practices in countries and regional offices. RCs were brought together by the GO on a regular basis to discuss methodology and processes. Effort went into ensuring countries used the same methodology and compatible data collection procedures. NCs met on a regular basis with their RC to ensure consistency. The *ICP Handbook* and the *ICP Operational Manual* were developed to ensure a common understanding and use of the methodology. A huge effort went into the preparation of specifications for the products to be priced. Software was developed to ensure that the same rigid data validation was applied.

4. Efforts to improve the quality of ICP data and statistics will continue throughout the 2011 round. To promote these efforts, the GO has had the ICP Quality Assurance Framework, or ICP-QAF, drafted. The framework is structured to evaluate the quality of the 2011 round in terms of (1) ICP processes in countries, regional offices, and the GO, and (2) ICP input data (prices and final expenditures) and ICP output data (PPPs, price level indices and volume measures). The framework is still a work-in-progress and some modification may be required, but successful application during the 2011 round will mean it can be used to appraise the quality of rounds that follow.

## **ICP Quality Assurance Framework**

5. ICP-QAF is derived from the IMF-DQAF – that is the Data Quality Assessment Framework that has been developed by the International Monetary Fund. The IMF-DQAF brings together best practices and internationally accepted concepts and definitions in statistics, including those of the United Nations Fundamental Principles of Official Statistics and the General Data Dissemination System of the IMF. It provides a structure for assessing data quality by comparing country statistical practices with best practices. It focuses on the quality-related features of governance of statistical systems, core statistical processes, and statistical products. It has been developed to introduce rigor, structure, and a common language in the assessment of the quality of macroeconomic data.

Cascading Structure of the IMF-DQAF	
Level 1: Dimensions	<b>1.0 PREREQUISITES OF QUALITY</b>
Level 2: Elements	<b>1.1 The legal and institutional environment</b>
Level 3: Indicators	1.1.1 Responsibility for collecting, processing, and disseminating the statistics is clearly specified.
Level 4: Focal issues	<i>i. The primary responsibility for collecting, processing, and disseminating the statistics is clearly established.</i>
Level 5: Key points	<ul style="list-style-type: none"> <li>• A law, such as a statistical law, or other formal provision assigns primary responsibility as well as the authority to an agency (agencies) for the collection, processing, and dissemination of the statistics.</li> <li>• Conflicts or potential conflicts between the formal authority to produce the statistics and other laws or provisions (e.g. access to information law or bank secrecy laws) have been successfully resolved or reconciled with no major impairment to data production.</li> </ul>

6. The IMF-DQAF is organized in a cascading structure that progresses from the abstract and general to the concrete and specific. It has five levels shown in the table above. The first level covers six dimensions of quality: the prerequisites of quality (which, strictly speaking, are not dimensions of quality), assurances of integrity, methodological soundness, accuracy and reliability, serviceability, and accessibility. For each of these six dimensions, there are elements at the second level and indicators at the third level. At the next level, the fourth level, there are focal issues that are specific to the particular data sets being addressed. And finally, below focal issues at the fifth level, there are key points that suggest quality features that it may be fruitful to consider in addressing the focal issues. Key points are not meant to be exhaustive.

Cascading Structure of the ICP-QAF	
Level 1: Dimensions	<b>1.0 PREREQUISITES OF QUALITY</b>
Level 2: Elements	<b>1.1 The legal and institutional environment</b>
Level 3: Focal issues	<i>1.1.1 The primary responsibility for collecting, processing, and disseminating ICP statistics is clearly established.</i>
Level 4: Key points	<ul style="list-style-type: none"> <li>• A law or other formal provision assigns primary responsibility to an agency to perform the GO/RCA/NCA functions for the collection, processing, and dissemination of ICP statistics. Such a provision could be a resolution of the UN Statistical Commission, a memorandum of understanding, or a statistical law.</li> <li>• Conflicts or potential conflicts between the formal authority to produce ICP statistics and other laws or provisions, such as an access to information law or the internal policies or processes of the GO/RCA/NCA, have been successfully resolved or reconciled with no major impairment to data production.</li> </ul>

7. The ICP-QAF has the same cascading structure as shown above, but consists of only four levels. Indicators, IMF level 3, have been dropped to avoid unnecessary repetition. As a result, focal issues and key points have both moved up a level: focal issues from 4 to 3 and key points from 5 to 4.

8. The IMF-DQAF was developed with specific macroeconomic data sets, typically compiled by a single institution in a country, in mind. National accounts, consumer prices and producer prices are examples of such data sets. The ICP, however, does not conform to this model and has the following three levels of operation:

- **World level:** The GO carries out the day-to-day work required to implement the ICP worldwide. The GO reports regularly to the ICP Executive Board with annual work programs and budgets requiring the approval of the Board. Important activities carried out by the GO and its external consultants are the development of ICP standards, the preparation of the framework to determine the goods and services to be priced, preparing the *ICP Handbook* and the *ICP Operational Manual*, producing the software for countries to edit and input price data, analyzing data collected for the ICP, organizing the price collection for world comparison and the price collections for dwelling services,

government services and capital goods, aggregating the price and final expenditure data within and between regions and disseminating the results of the world comparison. The GO incorporates the Eurostat-OECD results directly into the world comparison by treating the Eurostat-OECD group of countries as a sixth ICP region. The GO also imputes PPP and volume measures for economies that do not participate in the benchmark comparison.

- **Regional level:** The RCAs coordinate ICP work in each of the five ICP geographical regions - Africa, Asia and the Pacific, Commonwealth of Independent States, Latin America, and Western Asia. The RCAs are responsible for developing regional price lists, data collection, data validation of prices and final expenditures from the NCAs, and compilation and dissemination of the regional results.
- **Country level:** The NCAs are responsible for assembling the country's ICP data - national final expenditures, prices for consumer products, equipment goods and construction, compensation of employees for selected occupations in government, actual and imputed rents, quantitative and qualitative data on the dwelling stock, population and exchange rates - in accordance with ICP requirements and transmitting them to the RCA. This entails ensuring that statistical staff, particularly price collectors, are trained in the concepts underlying the ICP and the practical implications of collecting prices; that data are edited and entered into the ICP data base; and that editing queries from the RCA are handled promptly. The NCAs also attend the data validation workshops that are held in each of the regions to check the consistency of the data supplied within each region.

9. Any adaptation of the IMF-DQAF to the ICP has to recognize and accommodate the complex data collection and compilation arrangements that apply to the Program. There are two possible ways of doing this. One is to have an ICP-QAF particular to each level; the other is to have a generic ICP-QAF applicable to all levels that can be made level specific as and when required. As the majority of focal issues and key points are common to all levels, it has been decided to opt for the second approach. The result is an ICP-QAF applicable to the three organizational levels but with divergences noted. Hence, for example, the ICP-QAF shows focal issues and key points relating to the calculation and aggregation of basic heading PPPs as being relevant to the RCAs and the GO only. The NCAs do not compute PPPs. The ICP-QAF provides the basis for the three checklists that the GO has drawn up to assess the quality of the data and statistics produced by the NCAs, the RCAs and the GO.

## **Data sets**

10. The ICP-QAF and the checklists refer to "ICP data" or "ICP statistics" without further elaboration. The following list of data sets has been prepared to provide clarification. The list is divided into two parts. The first part refers to the regional comparison programs organized by the RCAs; the second part refers to the global comparison program organized by the GO. The data sets listed for a regional program cover only the countries in the region



participating in the regional comparison. Data sets listed for the global program covers all regions and countries participating in the global comparison.

### **Regional comparison programs**

- Individual price observations at the product level for consumer goods and services specified on the region's product list. These include individual price observations for the consumer goods and services specified on the global Core Product List and priced in the region.
- National annual average prices for products priced in the region and used to compute basic heading purchasing power parities (PPPs) for the regional comparison. These include the national annual average prices for consumer goods and services on the region's product list; the national annual average prices for consumer goods and services on the Core Product List; and the national annual average prices for products on the global product lists for housing, government, equipment and construction. (In the case of housing, there are also quantity and quality data on the housing stock.)
- National final expenditures on GDP broken down by basic heading. These are used as weights when aggregating basic heading PPPs for the regional comparison, they also the expenditures that the PPPs convert to real expenditures.
- PPPs, national expenditures and real expenditures at the basic heading level from the regional comparison.
- Price level indexes (PLIs) at the basic heading level from the regional comparison.
- PPPs, PLIs, national expenditures and real expenditures for agreed analytical categories and main aggregates from the regional comparison.
- Population data and exchange rates used for the regional comparison.
- Regional metadata.

### **Global comparison program**

- Individual price observations at the product level for consumer goods and services specified on the global Core Product List from all regions.
- National annual average prices from all regions used to compute basic heading PPPs for the global comparison. These include the national annual average prices for consumer goods and services on the regional product lists and the global Core Product List; and the national annual average prices for products on the global product lists for housing, government, equipment, and construction. (In the case of housing, there are also quantity and quality data on the housing stock.)
- National final expenditures on GDP broken down by basic heading from all regions. These are used as weights when aggregating basic heading PPPs for the global comparison, they also the expenditures that the PPPs convert to real expenditures.
- PPPs, national expenditures and real expenditures at the basic heading level from the global comparison.
- Price level indexes (PLIs) at the basic heading level from the global comparison.
- PPPs, PLIs, national expenditures and real expenditures for agreed analytical categories and main aggregates from the global comparison.
- Population data and exchange rates used for the global comparison.
- Global metadata.

## 1. PREREQUISITES OF QUALITY

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Although they themselves are not dimensions of quality, this group of “pointers-to-quality” comprises institutional preconditions for the quality of statistics. Note that the focus is on the agency or agencies concerned with the statistics specified. In the case of ICP statistics, these are the agencies performing the functions of Global Office (GO), Regional Coordinator (RC), or National Coordinator (NC).

### 1.1 The legal and institutional environment is supportive of statistics

*1.1.1 The primary responsibility for collecting, processing, and disseminating ICP statistics is clearly established.*

- A law or other formal provision assigns primary responsibility to an agency to perform the GO/RCA/NCA functions for the collection, processing, and dissemination of ICP statistics. Such a provision could be a resolution of the UN Statistical Commission, a memorandum of understanding, or a statistical law.
- Conflicts or potential conflicts between the formal authority to produce ICP statistics and other laws or provisions, such as an access to information law or the internal policies or processes of the GO/RCA/NCA, have been successfully resolved or reconciled with no major impairment to data production.

*1.1.2 Arrangements or procedures exist to facilitate data sharing and coordination between the agency with the primary responsibility for compiling ICP statistics and other data producing agencies.*

- Contacts, through regular meetings and workshops as well as other means, are maintained with other data producing agencies to promote consistency of methods and a proper understanding of data requirements, to avoid duplication of effort, and to take into account appropriate allocation of responsibilities.
- Procedures are in place to provide for the effective and timely flow of source data, such as price and national expenditure data, to the NCA from other data producing agencies within the country, to the RCA from the NCAs, and to the GO from the RCAs.

*1.1.3 The confidentiality of individual data is guaranteed and the guarantee is widely known.*

- A law or other formal provision, such as the internal rules of the GO/RCA/NCA, clearly states that individual data, such as the prices observed at a specific outlet or the prices observed for a particular product, are to be treated as confidential and shall not be disclosed or used for purposes other than statistical purposes unless disclosure is agreed to in writing.

*1.1.4 Procedures are in place to prevent disclosure of individual data.*

- Rules and regulations to prevent disclosure of individual data include penalties against staff who disclose such data.
- Special aggregation rules are used to prevent residual disclosure when aggregations of individual data are submitted (NCAs and RCAs) or disseminated (RCAs and GO).
- Staff review all data prepared for submission (NCAs and RCAs) and dissemination (RCAs and GO) for possible indirect disclosure of individual data.
- Where data beyond those in public releases are made available for purposes such as research, the confidentiality of the individual data is protected.
- Confidentiality of individual data is appropriately guarded during storage and during the process of the destruction of records.
- Steps are taken to secure the premises of the GO/RCA/NCA and its computer systems to prevent unauthorized access to individual data.

*1.1.5 A law or other formal provision provides for the reporting of information needed to compile ICP statistics.*

- The GO/RCA/NCA has the formal authority to collect data required to compile ICP statistics.

*1.1.6 Other mechanisms are in place to provide for adequate reporting of data for compiling ICP statistics.*

- The GO/RCA/NCA carefully considers practical issues, such as the availability of data and the options for collecting data, that may arise in compiling ICP statistics and periodically evaluates current and alternative approaches.
- The GO/RCA/NCA provides assistance in completing and submitting forms to those reporting data to it. For example, by providing appropriate computer software.

**1.2 Resources are commensurate with the needs of the statistical program and measures to ensure efficient use of resources are implemented.**

*1.2.1 Staff resources for compiling ICP statistics are adequate to perform required tasks.*

- The number of staff is adequate to perform the required tasks.
- The qualifications of the staff are adequate, with their skills maintained and developed to perform the required tasks.
- A core staff with adequate training is maintained and staff turnover is manageable.

*1.2.2 Computing resources for compiling ICP statistics are adequate to perform required tasks.*

- Sufficient resources are allocated and best efforts are made to exploit the full potential of effective computing technology for compiling, submitting and disseminating ICP statistics.
- Adequate protection is provided for computer resources, including the provision of emergency back-up systems for retrieval of ICP data in the event of natural disasters, accidents, and other unusual events.

*1.2.3 Physical facilities and other resources are adequate to perform required tasks.*

- Office facilities (office condition, office space, lighting, heating, cooling, furniture, equipment, etc.) are adequate for the performance of required tasks.

*1.2.4 Funding for compiling ICP statistics is adequate to perform required tasks.*

- Funding is reasonably secure for the identified needs of the ICP both within the GO/RCA/NCA and for the global/regional/national program more generally.
- The funding horizon is amenable to planning for statistical developments over the full cycle of an ICP round.

*1.2.5 Management ensures that resources are used efficiently.*

- Periodic reviews of staff performance are conducted.

- Efficiencies are sought through periodic reviews of work processes and of their cost effectiveness in relation to objectives.
- When necessary, the GO/RCA/NCA seeks outside expert assistance to evaluate statistical methodologies and compilation systems.

*1.2.6 Costing and budgeting practices are in place and provide sufficient information to management to make appropriate decisions.*

- Budgeting procedures are used to help allocate resources.

### **1.3 Relevance**

*1.3.1 Specific actions are taken to ensure that current ICP statistics meet needs of users.*

- Users are consulted and kept informed on specific aspects of current ICP data - such as their usefulness in terms of detail, periodicity, and timeliness - through surveys, newsletters or seminars. Users' feedback is actively sought through, for example, the provision of an e-mail address to contact.

*1.3.2 Mechanisms are in place to identify new and emerging data requirements.*

- A structured and periodic process of consultation takes place with key policy stakeholders and other principal users - such as academia, the press, and other private sector representatives - to review the usefulness of existing ICP statistics and to identify any emerging requirements that may need to be taken into account in the next ICP round.
- The GO and the RCAs carry out studies to help identify new and emerging data requirements that may need to be taken into account in the next ICP Round.
- The GO/RCA/NCA regularly participates in statistical meetings and seminars organized by international and regional organizations and by professional organizations such as International Statistical Institute and International Association for Official Statistics.

### **1.4 Other quality management**

*1.4.1 There is recognition throughout the GO/RCA/NCA that quality builds trust and thus is a cornerstone of statistical work.*

- Management is sensitive to all dimensions of data quality and promotes a shared concern for quality throughout the GO/RCA/NCA. For example, the mission statement emphasizes the importance of quality and managers are held accountable for achieving quality.
- Staff training programs emphasize the importance of quality and give staff an understanding as to how quality may be achieved.
- The GO/RCA/NCA provides an infrastructure for quality by recognizing trade-offs, economies of scale, and interrelations between data sets.
- Information is publicly available on the GO/RCA/NCA's commitment to quality, including information about trade-offs affecting the statistical work program.

#### *1.4.2 Measures are in place for a systematic monitoring and review of quality.*

- Monitoring processes are in place to inform managers on the quality achieved during the ICP round. For example, data gaps, editing rates and adherence to timetables.
- Periodic reviews are carried out to identify steps necessary to maintain or improve data quality in future ICP rounds.
- The GO/RCA/NCA has access to expert guidance on the quality of their data and on strategies for improving data quality.

#### *1.4.3 When planning the ICP, quality issues, including implicit and explicit trade-offs among the dimensions of quality, are considered.*

- Quality issues, such as the following, are addressed explicitly and taken into account in the work program planning process:
  - Quality improvements identified during ongoing monitoring and in periodic reviews.
  - Feedback from users on quality standards and on new and emerging data requirements.
  - Trade-offs among the dimensions of quality, such as between resource availability, timeliness, accuracy and reliability.

## 2. ASSURANCES OF INTEGRITY

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This dimension relates to the adherence to the principle of objectivity in the collection, compilation, submission and dissemination of statistics. The dimension encompasses institutional arrangements that ensure professionalism in statistical policies and practices, transparency, and ethical standards. Again the focus is primarily on the agencies responsible for collecting, processing, submission and disseminating ICP statistics, namely: the agencies performing the functions of GO, RC or NC.

### 2.1 Professionalism

*2.1.1 The terms or conditions under which ICP statistics are produced are in accordance with professional independence.*

- A law or other formal provision supports professional independence by:
  - Addressing the general need for professional independence by the Global Manager (GM)/RC/NC and, in doing so, the importance of professional independence in carrying out statistical functions is clearly stated and recognized.
  - Prohibiting interference from others in the compilation, submission (NCAs and RCAs) and dissemination (RCAs and GO) of ICP data and statistics.
  - Ensuring that the choice, tenure, and reporting arrangements of the GM/RC/NC are supportive of the professional independence required for GM/RC/NC functions. For example, tenure is consistent with the timeframe of an ICP round; appointment and removal of the GM/RC/NC results from transparent processes with emphasis on professional qualifications and performance.
- If there is no law or formal provision to support professional independence:
  - Traditions or cultures of professionalism are clearly recognized as essential to the credibility of statistical results. For example, others within the agency hosting the GM/RC/NC understand the importance of non-interference.
  - The choice, tenure, and reporting arrangements of the GM/RC/NC are supportive of the professional independence required for GM/RC/NC functions.



*2.1.2 Professionalism is actively promoted and supported within the GO/RCA/NCA.*

- In the context of the general personnel policies and practices applying in the GO/RCA/NCA, recruitment and promotion are, as far as possible, based on relevant aptitude and expertise in ICP requirements. For example, expertise in project management and prices and national accounts subject matter.
- Formal training by internal and outside experts and on-the-job training in methodology and compilation methods is provided. This includes participation in seminars, courses, and workshops to further knowledge of statistical practices and providing easy access to professional literature.
- Research and analysis, including rationale for the choice of methodologies, are encouraged and published subject to internal review and other processes to maintain the GO/RCA/NCA's reputation for professionalism.

*2.1.3 The choices of data sources and statistical techniques for the ICP are informed solely by statistical considerations.*

- The choice of source data and statistical techniques for the ICP is based on measurement objectives and data requirements only.

*2.1.4 Decisions about the submission (NCAs and RCAs) and dissemination (RCAs and GO) of ICP data are informed solely by statistical considerations.*

- Decisions to submit and disseminate ICP data are based on statistical considerations only.

*2.1.5 The GO/RCA/NCA comments when ICP statistics are misinterpreted or misused.*

- The GO/RCA/NCA seeks to prevent misinterpretation or misuse of ICP statistics by providing explanatory materials and briefings. To the media for example.
- The GO/RCA/NCA:
  - Monitors media coverage of ICP statistics ("clipping service").
  - Comments publicly and in a timely manner on erroneous interpretations or misuse of ICP statistics in the media and in other fora.

## 2.2 Transparency

*2.2.1 Information is available to the public about the terms and conditions under which ICP statistics are compiled and disseminated. This includes information on the obligation to compile and disseminate ICP statistics, the confidentiality of individual data, and other key features.*

- GO/RCA/NCA publications and websites reproduce material about the terms and conditions under which ICP statistics are compiled and disseminated. These terms and conditions may refer to the formal mandate to compile and disseminate ICP statistics, the confidentiality of individual data, such as the prices observed at a specific outlet or the prices observed for a particular product, and other key features. For example, the codes of conduct under which ICP statistics are compiled and disseminated, the approval process for data dissemination, the procedures to hire and remove the GM/RC/NC.

*2.2.2 The public is made aware of pre-embargo access to ICP statistics prior to their release to the public.*

- Pre-embargo access arrangements to ICP statistics prior to release are made public in terms of who has access, and how long before the dissemination access is given.

*2.2.3 Statistical products are clearly identified so that the public is aware of what the GO/RCA/NCA takes responsibility for.*

- Data released to the public are clearly identified as the GO/RCA/NCA's product by name, logo, and insignia.
- The GO/RCA/NCA requests attribution when its statistics are used or reproduced.

*2.2.4 Users of ICP statistics are made aware in advance of major changes in methodology, source data, and statistical techniques.*

- Advance notice is given to the public when major changes are introduced in methodology, sources, and statistical techniques employed for ICP statistics. For example, through articles in bulletins, briefings, or news releases.

## **2.3 Ethical standards**

### *2.3.1 A clear set of ethical standards has been prepared.*

- There are clear guidelines outlining correct behavior when the GO/RCA/NCA or its staff is confronted with potential conflict of interest situations. As appropriate, these guidelines may be the general guidelines applying to all staff in the hosting agency.
- There are clear guidelines that make the connection between ethics and staff work. For example, with respect to guarding against misuse and misrepresentation of ICP data and statistics.

### *2.3.2 Staff is made aware of the ethical standards.*

- New staff is made aware of the standards when they join the GO/RCA/NCA.
- Staff is reminded periodically of the standards. For example, in staff training, announcements to staff, or by requiring staff to periodically reaffirm ethical practices or adhere to conflict of interest policy.

### 3. METHODOLOGICAL SOUNDNESS

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This dimension covers the idea that the methodological basis for the production of statistics should be sound and that this can be attained by following internationally accepted standards, guidelines, or good practices. The dimension is necessarily data specific, reflecting different methodologies for different sets of data.

The two principal data sets that countries are required to provide for the ICP are: a set of national annual purchasers' prices for a selection of products chosen from a common basket of precisely-defined goods and services; and a set of final expenditures on GDP broken down according to a common classification. Both data sets cover the whole range of final goods and services included in GDP and both refer to the year of the comparison. Although countries have to provide other data, such as annual average exchange rates and the mid-year resident population for the reference year, this dimension is primarily concerned with prices and expenditures.

The soundness of the methodological basis of the ICP is assessed in terms of the guidelines outlined in the *ICP Handbook*, which provides the theoretical and methodological background to guide data collection, data validation, the estimation of PPPs and real expenditures, and subsequent analysis. The GO is responsible for the development of the *Handbook*. It is compiled on the basis of internationally accepted theory and practices regarding PPPs and, following peer reviews by internationally recognized experts in price statistics and national accounts, is widely acknowledged to be so.

#### 3.1 Concepts and definitions

*3.1.1 Internationally accepted standards, guidelines, or good practices as detailed in the ICP Handbook and other relevant ICP technical documents are followed in compiling ICP statistics.*

- The requirements of the *ICP Handbook* and other relevant ICP technical documents are followed in compiling ICP statistics.

#### 3.2 Scope

*3.2.1 The scope of ICP statistics covers all final expenditures included in GDP.*

- The scope of the ICP statistics covers the basic headings comprising final expenditures on GDP as defined in the version of the UN *System of National Accounts* (SNA) on which the ICP round is based. ICP rounds are currently based on the 1993 SNA.

- GDP estimates of countries participating in the round cover the full range of economic activities and transactions that are included in the 1993 SNA production boundary.
- Price collection arrangements ensure that national annual prices, consistent with the prices underlying expenditure on each of the basic headings, are available for countries participating in the round.
- Purchasing power parities and volume estimates for countries that do not participate in the round employ internationally accepted estimation techniques. (GO only)

### **3.3 Classification/sectorization**

*3.3.1 The classification and sectorization used in the compilation of ICP statistics are in broad conformity with internationally recommended systems.*

- The 1993 SNA is followed to classify (1) institutional units, (2) transactions and (3) other flows.
- The *Classification of Final Expenditure on GDP*, as specified in the *ICP Handbook*, is used for purposes of price collection and provision of expenditures.

### **3.4 Basis for recording (NCAs only)**

*3.4.1 The valuation rules used for recording flows and stocks are in accordance with the 1993 SNA.*

- With respect to the final expenditures on GDP compiled for ICP purposes:
  - The general rule is that transactions are valued at the actual prices agreed by the transactors – that is at purchasers' prices.
  - Imputed rentals of owner occupiers are valued in accordance with the guidelines contained in the *ICP Handbook*.
  - Household consumption of goods produced on own account is valued at basic prices.
  - Income in kind is valued at purchasers' prices if the employer has purchased the goods or services, or valued at producers' prices if the goods or services have been produced by the enterprise itself.

- Individual consumption expenditure by non-profit institutions serving households is valued at cost (that is the sum of the costs of production including the consumption of fixed capital).
- Production of individual services by government is valued at cost.
- Purchases of goods and services by government, which are passed on to households without any further processing by government, are valued at purchasers' prices.
- Collective consumption expenditure by government is valued at cost.
- Gross fixed capital formation is valued at purchasers' prices.
- Own-account production of fixed capital assets is valued at basic prices.
- Change in inventories is valued as the change in the physical quantities of inventories at the beginning and end of the year using, preferably, the average prices over the year, or prices prevailing in the middle of the year.
- Total imports and exports are valued on an f.o.b. (free-on-board) basis.
- Transactions in foreign currency are converted using the mid-point exchange rate prevailing in the market at the moment they take place.
- Proper adjustments are made if a system of multiple official exchange rates exists.
- With respect to the prices collected for ICP purposes:
  - Prices collected are consistent with those underlying the final expenditures on GDP.
  - These prices are collected as national annual prices. If they are not, then accepted procedures are used to adjust the prices collected to national annual prices.
  - Product specifications include the price-determining characteristics that influence the product's transaction price as well as the product's technical parameters.

*3.4.2 The timing rules used for recording flows are in accordance with the 1993 SNA.*

- Transactions and flows are recorded on an accrual basis.

- Work-in-progress is recorded in the period it is produced.
- Government-related transactions are recorded on an accrual basis. In particular, (1) taxes and subsidies on products and (2) expenditures.
- National annual prices relate to the ICP reference year.

*3.4.3 The grossing/netting procedures are in accordance with the 1993 SNA.*

- Gross fixed capital formation consists of net acquisitions (acquisitions less disposals) of fixed assets.
- Valuables are measured as acquisitions less disposals.
- Transaction prices are measured net of discounts or rebates.

### **3.5 Aggregation (GO and RCAs only)**

*3.5.1 Compilation of basic heading PPPs recognizes the concept of representativity and produces transitive basic heading PPPs.*

- The Country-Product-Dummy method with Representativity (CPRD) or the Country-Dummy-Product method (CPD), which is an acceptable alternative, is used to estimate transitive basic heading PPPs within regions. It is also used between regions to obtain transitive basic heading PPPs at the world level.

*3.5.2 Compilation of higher level PPPs avoids bias and produces transitive higher level PPPs.*

- Compilation of higher level PPPs involves trade-offs among alternative methods such as losing additivity but avoiding the Gerschenkron effect. The method used is therefore clearly specified together with reasons for its selection.
- Compilation method produces unbiased transitive higher level PPPs that are invariant to the choice of country or numéraire currency.

## 4. ACCURACY AND RELIABILITY

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This dimension covers the idea that statistical outputs sufficiently portray the reality of the economy. This dimension is also data specific, reflecting the sources used and their processing. It focuses on prices and final expenditures, the two principal data sets required for the ICP.

### 4.1 Source data

*4.1.1 The data collection programs employed to compile the ICP statistics are adequate.*

- The data sources of the data collection program are broadly sufficient to compile the ICP statistics.
- The data sources are kept under continuous review to ensure that the data collection program is comprehensive.
- Information from other available sources supplements core compilation.

*4.1.2 The price collection program is conducted such that adequate price data are available for ICP purposes.*

- The Structured Product Descriptions (SPDs) provide a sound basis for the generation of precise and detailed product specifications for price surveys so as to ensure that comparable products are priced in each country.
- The GO agency and the RCAs provide adequate oversight of the global, regional and national price collection programs.
- Price recording forms are constructed according to sound design principles. For example, they are subject to pilot testing in the field. They are reviewed periodically to take account of changed circumstances, and proposed changes are pre-tested to ensure effectiveness.
- The price collection framework ensures that prices collected are suitable for the direct calculation of national annual prices or their estimation by acceptable procedures.
- The national annual prices are consistent with those underlying the final expenditures on GDP.
- Price data collected are sufficiently detailed to enable adequate data verification.



- The price collection framework supports supplementary collections to allow the unscheduled ad hoc collection of data to support the main collections.
- GO only:
  - The GO manages the price collections for items that are difficult-to-price items including housing services, equipment goods, construction and government services and, in doing so, provides guidance and direction to the RCAs and the NCAs.
  - Adequate inter-regional validation is undertaken by the GO of the prices of difficult-to-price items collected by countries in the various regions.
  - Selection of items to be included in the Core Product List - which is to be priced by all countries participating in the round - is based on objective criteria aimed at computing robust factors to link the regions in the world comparison.
  - The GO provides guidance and direction to the RCAs on the selection of items from the Core Product List to be included in the regional list and on the subsequent selection of core items for pricing by the NCAs in their regions.
  - Adequate inter-regional validation is undertaken by the GO of core product prices collected by countries in the various regions.

*4.1.3 GDP and the main expenditure aggregates are available for weighting purposes and to generate volume estimates.*

- GDP data, broken down into basic headings, are available for the reference year (NCAs) and for all participating countries (RCAs and GO). (These data are used as weights in compiling higher level PPPs and are deflated to generate internationally comparable volume estimates for basic headings and for the various for levels of aggregation up to and including GDP.)
- GDP data respect SNA guidelines as far as possible but may be deficient in minor respects. (“Minor” in this sense means that the deficiencies do not seriously affect the level of total GDP or the relative shares of household consumption, government consumption and capital formation.)

*4.1.4 Ad hoc data collections are carried when needed to fill data gaps or to complement data collected in the main surveys.*

- Ad-hoc data collections are carried out, as necessary, to fill data gaps or to complement data already collected.

*4.1.5 ICP data collection programs are sufficiently open and versatile to allow for new developments in sources. (GO and RCs only)*

- Periodic meetings are held with interested parties to identify new developments that need to be taken into account in price collections and national accounts compilations.
- The press and research papers are monitored for information on activities that need to be taken into account in ICP work.
- International standards, guidelines, and practices are monitored for changes that need to be taken into account in ICP work.
- The GO and the RCA consult with each other and with the NCAs ascertain changes in circumstances that may affect ICP statistics.

*4.1.6 ICP source data approximate the definitions, scope, classifications, and valuation, and time of recording required.*

- Pilot tests have been conducted to ensure that price data collected will allow compilation of estimates according to ICP guidelines.
- Final expenditures on GDP are consistent with the time of recording, reference periods, and valuation requirements of ICP statistics.
- Final expenditures on GDP are broken down by basic heading in line with the ICP classification.

*4.1.7 The ICP data collection program provides adequate coverage of economic activities. (NCAs only)*

- The frequency of price collection is sufficient to approximate annual prices.
- The geographic spread of the price collection is sufficient to approximate national prices.
- If either or both of the above do not apply, accepted procedures are used to estimate national annual prices.

*4.1.8 The ICP data collection program provides for the timely receipt of data.*

- Data collection and processing timetables are adequate to meet timeliness and periodicity for the submission of ICP data (NCAs and RCAs) and the dissemination of ICP statistics (RCAs and GO).
- The GO/RCAs/NCAs employ rigorous follow-up procedures to ensure the timely receipt of source data.

## **4.2 Assessment of source data**

### *4.2.1 Accuracy of country data is routinely assessed.*

- Country final expenditure data are analyzed to ensure they are adequate, in terms of comprehensiveness, level of detail, and being up-to-date, for ICP purposes.
- Editing procedures - for example, the standard deviation of prices at the national level and the residuals from the CPD method at the regional level - are used to assess price variability and to identify outliers and other atypical differences in price data for individual countries. Extreme values are confirmed and records maintained on the confirmation.
- Country data are also analyzed to correct for underreporting or misreporting and, in particular, to check for (1) inter-country consistency and (2) consistency with other related source data.

### *4.2.2 Accuracy of the information from administrative and other supplementary sources is routinely assessed.*

- Accuracy of administrative and other supplementary data used to verify the credibility of ICP statistics is routinely assessed.

## **4.3 Statistical techniques**

### *4.3.1 ICP data compilation procedures are sound.*

- Compilation procedures minimize processing errors such as coding, editing, and tabulation errors.
- Adjustments to source data are made only when it is clearly warranted. For example, validated outliers are not replaced or modified unless clearly required and then only after confirmation with the country concerned.

*4.3.2 Appropriate measures are taken to validate ICP source data.*

- Sound estimation techniques are employed to adjust data for missing observations.

*4.3.3 Appropriate techniques are used to ensure data used for weighting purposes are consistent with ICP requirements.*

- Statistical procedures used to adjust final expenditure data to meet ICP requirements follow a detailed, case-by-case, approach using specific sources that are most closely related to the estimated variables and pertinent to the reference period.
- Changes to data are only made with the concurrence of the country concerned.

*4.3.4 Generally-accepted good-practice statistical techniques are used to compile national annual prices.*

- National annual prices are compiled in accordance with the guidelines for price collection and validation as set out in the *ICP Handbook*.

*4.3.5 Generally-accepted good-practice statistical techniques are used to compile the purchasing power parities. (GO and RCAs only.)*

- Compilation of basic heading PPPs recognizes the concept of representativity and produces transitive basic heading PPPs.
- Compilation of higher level PPPs avoids bias and produces transitive higher level PPPs that are invariant to the choice of country or numéraire currency.

#### **4.4 Assessment and validation of intermediate data and statistical outputs**

*4.4.1 Intermediate results are validated against other independent data.*

- Intermediate data used to compile national annual prices and national accounts expenditures for ICP purposes are checked against other independent data sources where available.

*4.4.2 The discrepancies in intermediate data are routinely investigated and measures taken to remove them.*

- A systemic procedure, such as the Quaranta table or the Dikhanov table, exists to routinely assess the potential discrepancies in intermediate data.
- Appropriate adjustments are made to remove the discrepancies in consultation with the countries concerned.

#### *4.4.3 Unusual or unexpected differences in PPPs among countries are investigated.*

- Unusual or unexpected differences among PPPs, such as those arising from incorrect weights, are investigated.
- Comparisons with data from previous ICP rounds are used to check the credibility of the latest results.

## **4.5 Revision studies**

### *4.5.1 Revision studies are undertaken on a regular basis.*

- Studies are carried out to assess the initial estimates for the ICP round against revised or final estimates. They comprise (1) studies of scale (magnitude of revision and number of times series revised) and (2) studies of direction of revisions. They investigate the sources of errors, omissions, and fluctuations in the data and explain the methods of revising the data.

### *4.5.2 Measures are undertaken to incorporate the findings from revision studies in data compilation.*

- Findings from revision studies are used to refine preliminary data and data collection programs for subsequent ICP rounds.
- Adequate documentation on revisions is maintained and includes description of causes of revisions, methods used to incorporate new data sources, the consultations that took place between the GO, the RCAs and the NCAs, and the way data are adjusted.

## 5. SERVICEABILITY

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This dimension relates to the requirement that statistics are disseminated with an appropriate periodicity in a timely fashion, are consistent internally and with other major data sets, and follow a regular revision policy.

### 5.1 Periodicity and timeliness (GO and RCAs only)

*5.1.1 The periodicity of ICP statistics follows understandings reached at the UN Statistical Commission.*

- ICP statistics are compiled every six years.

*5.1.2 The timeliness of ICP statistics follows understandings reached at the UN Statistical Commission.*

- ICP statistics are disseminated two years after the reference year. This is comparable with the timeliness of the parallel Eurostat-OECD program.

### 5.2 Consistency

*5.2.1 ICP statistics are internally consistent.*

- Price data are consistent with the valuation basis of national accounts expenditure data. In other words, there is consistency within the value = volume x price framework.

*5.2.2 ICP statistics are consistent over time.*

- Detailed methodological notes identify and explain the main breaks and discontinuities in methods, source data and statistical techniques between ICP rounds. The causes for the breaks and discontinuities are explained as are their potential impacts on ICP statistics.

*5.2.3 ICP statistics from the latest round are consistent or reconcilable with those derived from previous ICP rounds.*

- Users are advised of the differences between the statistics from the latest ICP round and those derived from previous ICP rounds. The reasons for the differences are also explained.

### 5.3 Revision policy and practice

*5.3.1 The practice of revisions from initial estimates to final results follows a predictable pattern of which users are informed.*

- The revision cycle is predetermined and stable for the round. The revision cycle is made known to the public and the reasons underlying the cycle, such as the availability of national, regional and global data, are explained
- Adequate documentation of revisions is included in ICP statistical publications and in the ICP data bases accessible to users.

*5.3.2 Users are informed about the preliminary nature of ICP data.*

- Users are informed whenever ICP data are preliminary at the time of dissemination.

*5.3.3 Users are informed about the revised nature of ICP data.*

- Users are informed whenever ICP data are revised at the time of dissemination.

*5.3.4 Users are informed of results and studies of the revisions to ICP statistics.*

- Revisions are measured, assessed, and explained in ICP statistical publications and in the ICP data bases accessible to users.
- Analysis of differences between the revised and preliminary data is published for major aggregates to allow an assessment of the reliability of the preliminary data.

## 6. ACCESSIBILITY

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This dimension relates to the need for data and metadata to be presented in a clear and understandable manner on an easily available and impartial basis, that metadata are up-to-date and pertinent, and that a prompt and knowledgeable support service is available.

### 6.1 Data accessibility

*6.1.1 The presentation of ICP statistics is commensurate with users' needs.*

- ICP statistics are published in a clear manner. Charts and tables are disseminated with the data to facilitate analysis.
- ICP statistics are published at a sufficiently detailed level to meet users' needs.
- Analysis of current reference year circumstances is included with dissemination.

*6.1.2 ICP statistics are disseminated in formats to suit users' needs.*

- ICP statistics are disseminated in ways that facilitate redissemination in the media. For example, information releases.
- More comprehensive and/or detailed statistics are also disseminated in paper and/or electronic formats.
- Analytical series can be accessed, perhaps for a fee, through an electronic data base.

*6.1.3 ICP statistics are released to a pre-announced schedule.*

- ICP statistics are released punctually, according to a pre-announced schedule.

*6.1.4 ICP statistics are made available to all users at the same time.*

- The public is informed of ICP statistics being released and of the procedures to access them. For example, from publications or through the internet.
- ICP statistics are made available to all interested users simultaneously.
- If the press is briefed in advance, embargos are imposed to prevent early public disclosure.



*6.1.5 ICP statistics not routinely disseminated are made available to users upon request.*

- In addition to the ICP statistics routinely disseminated, other ICP statistics are made available upon request.
- Customized tabulations can be provided, perhaps for a fee, to meet specific requests.
- The availability of additional statistics and the procedures for obtaining them are made known.

## **6.2 Metadata accessibility**

*6.2.1 ICP metadata give adequate information about the meaning of the data and about the methodology used to collect and process them.*

- A comprehensive sources and methods document is published and updated regularly, and it includes the following:
  - Information on concepts, definitions, classifications, data sources, compilation methods, statistical techniques, and other relevant methodological aspects and procedures.
  - Departures from internationally accepted standards, guidelines, or good practices.
  - Information on data sources, such as price collection arrangements.
- The metadata are readily accessible through websites, statistical publications, etc. Their availability is cross-referenced in data releases. They are otherwise well publicized. In catalogs for example.

*6.2.2 Different levels of metadata detail are made available to meet the requirements of ICP data users.*

- General use information about ICP statistics is available and made public. For example, a brochure on how to locate the data.
- More specialized information is available and made public. For example, in background papers and working documents.

## **6.3 Assistance to users**

### *6.3.1 Adequate assistance is given to users of ICP statistics.*

- Prompt and knowledgeable service and support are available to users of ICP statistics.
- ICP statistical releases identify contact points for enquiries by mail, telephone, facsimile, or by e-mail.
- Material to raise awareness on the use of ICP statistics is available. For example, for schools and for research.
- Access points for clients to obtain statistical information are well advertised.

### *6.3.2 Catalogs of ICP publications and other services are available to users.*

- Catalogs detailing ICP publications, documents, other services to users and their prices are available and updated regularly.