

## The ICP Survey Framework

FREDERIC A. VOGEL

The primary purpose of the International Comparison Program (ICP) is to provide the means for converting national estimates of the gross domestic product (GDP) to a common currency. The foundation of the ICP is a system in which GDP is measured strictly according to the *System of National Accounts* and in which purchasing power parities (PPPs) based on a comparison of national prices for a selected basket of goods and services are used as the currency converters.

Chapter 3 presents the scope of the GDP expenditures and their breakdown into the major aggregates and basic headings required by the ICP. It is followed by the overview in chapter 4 of the basic concepts underlying the prices to be collected and the calculation of PPPs.

The PPPs for the more than 100 basic headings included in the final consumption expenditures by household aggregate of GDP are based on a comparison of the national annual average prices for a set of goods and services purchased by households. The goods and services must be precisely defined so that comparable products are priced across countries. The national annual average prices required are obtained from data collected from a sample of sales outlets. This chapter, devoted to the survey framework, describes the process used to select the products and the outlets.

Not all basic heading PPPs are based on direct price comparisons. For example, indirect methods are used to estimate PPPs for owner-occupied housing and government services, as described in chapters 12 and 16.

Within the survey framework presented in this chapter are the processes used (1) to describe the price-determining characteristics of each product to ensure that like products are priced across countries, (2) to determine the number of products to be priced, (3) to select the products to be priced, and (4) to select the sample of outlets where the prices will be obtained. These steps take into account the fact that basic heading PPPs are essentially an average of the individual product PPPs within the basic heading. The goal when defining the products is to select those with relative prices, so that either the Country Product Dummy (CPD) or the Gini-Élterö-Köves-Szulc (GEKS) method described in chapter 4 provides the basic heading PPP that would be an unbiased estimate

of the target population's PPP. The overall reliability of the PPPs at the level of the basic heading is dependent on the product specifications, the number of products priced, where they are priced, and the number of countries that provide the prices. As this chapter reveals, the development of the survey framework is an iterative process that continues through data validation. However, for discussion purposes these topics will be presented as follows.

The first section describes the process that uses structured product descriptions (SPDs) to depict the price-determining characteristics of all possible products within the basic heading that could be selected for price collection.

The second section provides guidelines, using data from the 2005 ICP, for determining the number of products that should be included within each basic heading and the number that each country should try to price. This is a crucial step because the PPPs for individual products vary considerably, even within the same basic heading. When the basic heading product PPPs vary widely by country, more products must be selected for price collection. Smaller numbers of products can be selected for pricing in basic headings in which only small differences appear in the product PPPs.

The actual selection of the products each country would price in each basic heading is covered in the third section of this chapter. Each country would want to include products widely consumed and considered to be representative of its price and consumption patterns. However, what is important in one country may not be so in another. Therefore, each country would have to agree to price products that may be comparable with those in other countries, even though those products may not be important in its own economy. This section provides the guidelines needed by countries to label each product as "important" or "less important." As described in chapter 4, this form of stratification is used in estimating the basic heading PPPs.

The fourth section describes how the sampling frame is determined and how the outlets for price collection are selected. The number of outlets, the type of outlet, and their location and distribution across the country all need to be considered. Guidelines are provided for each of these steps.

The concluding section reviews how the different aspects of the survey framework should be considered in the data validation step of the ICP.

## Determining Product Specifications

A new approach to product classification and identification was developed for the 2005 ICP. This approach was based on a new international product coding system and a process to describe price-determining characteristics using structured product descriptions. SPDs provided a standardized process for creating the detailed specifications for the products to be priced.

### Structured Product Descriptions

The first step in devising the SPDs for the 2005 ICP was to harmonize existing classifications for household consumption items. These classifications included the Eurostat–Organisation for Economic Co-operation and Development (OECD) classification of expenditure on GDP (described in chapter 3) and the Classification of Individual Consumption by Purpose (COICOP) established for household budget surveys. The Eurostat-OECD classification served as the base classification structure for the 2005 ICP when assigning products to basic headings. But the Eurostat-OECD classification had 222 basic headings, which for ICP purposes was too detailed, especially for developing countries. Thus the 222 basic headings were combined into 155. The

COICOP classification structure was then mapped to the Eurostat-OECD structure of 155 basic headings so that countries using the COICOP classification structure could be integrated into the ICP process.

After the Eurostat-OECD and COICOP classifications were harmonized, detail was added about the price-determining characteristics for products within each basic heading. The starting point was the coding system established by the U.S. Bureau of Labor Statistics (BLS) for the price surveys for the consumer price index (CPI). Commonly known as the BLS checklist, it is used during the price collection stage to identify the specifications of the products being priced. The BLS checklist is designed to describe products in a consistent way. Each checklist contains a list of characteristics describing a cluster of similar products in a basic heading. In some cases, the product cluster was the same as the basic heading. For example, there was only one BLS product cluster each for the rice and fresh milk basic headings. However, in the garment basic heading there were separate product clusters for men, women's, and children's clothing.

The characteristics related to each BLS product cluster were used to form the SPDs—one SPD for each product cluster within a basic heading. Annex A shows two examples of SPDs: the first for the fresh milk basic heading, which is represented by one SPD, and the second for women's clothing, which is one of several product clusters in the garment basic heading (men's and children's clothing have separate SPDs for the garment basic heading). A review of these two examples illustrates the different number of combinations of price-determining characteristics that can be used to define individual products.

The initial SPDs for each BLS product cluster were prepared by the Global Office and then reviewed by the ICP regional coordinators to ensure that the product characteristics reflected the realities of the countries in their regions. For example, in one update to reflect the regional input, type of milk—cow or buffalo—was added to the milk SPD.

SPDs can be used to define a large number of different products, even for a basic heading as homogeneous as rice. Rice comes in various forms: white and brown rice; long, medium, and short grain; and varieties such as basmati, which are sometimes sold under a brand name in many different package types and sizes. Quality can enter into the definition as well—for example, the various percentages of broken rice.

SPDs contain the following classification variables:

- *Quantity and packaging.* Indicates the units in which the product is sold. The specification should provide the range of the number of units, or size or weight, that determine the price of the product—for example, for a liter of milk versus 250 milliliters of milk.
- *Source.* Usually identifies whether the product is produced domestically or imported.
- *Seasonal availability.* Important for fruits and vegetables, indicates whether the product is available year-round or only seasonally.
- *Product characteristics.* The SPDs shown in annex A provide the product characteristics for milk and women's clothing. These illustrate that the number of characteristics depends on the heterogeneity of the products being specified.
- *Brand/label name.* Brands play an important role in the specification of products. International brands and model numbers may by themselves completely define a product. However, the characteristics of even branded products should be defined because these products can be sold in different sizes or models. The brand identifier should be viewed as an additional characteristic that is superimposed on an otherwise complete product specification. Table 7.1 from the *ICP 2005 Methodological Handbook* (World Bank 2007) defines the role of brands in product specifications.

**TABLE 7.1** Role of Brands in Product Specifications

Brand value	Single international brand or cluster of international brands named in specification		Branded product, but brand not named in specification	Product without any brand
	Some brand value exists		No brand value	
Product searched for by price collectors	Actual brand(s) and model(s) as specified; should be found in most or all countries in the region		National or local brands that have a reputation only within a country or locality	Products without a brand name
	One single brand	One out of a cluster of named brands	One out of a set of unnamed brands widely known within the country or locality	An unbranded product whose name or label, if any, has no significance to the buyer
Typical selling point	Reputation of the producer and assumed quality of the product		Reputation of the producer, shop, or other outlet and assumed quality of the product	Low price

Source: World Bank 2007.

Brands can have a significant price effect because of perceived or real quality differences. A general guideline is that price comparisons should be made only between products within the brand stratum. In other words, if a product with the same specifications has an international brand name in one country and is brandless in another country, it becomes, in effect, two different products and should not be directly compared. Another guideline when including international brands is to ensure they are consumed widely by the consumers. Some branded products may be comparable between countries, but are consumed by only a small number of consumers because they are luxury items.

## Using SPDs to Define Product Specifications

To determine the product specifications (PSs) using the SPDs, each country first mapped its consumer price index products to the SPDs. Each mapping determined a product specification. Each country then submitted this initial set of product specifications to its regional coordinator. The regional coordinator reviewed the PSs to identify overlaps, or where a change or additional price-determining characteristics would result in a product described in such a way that several countries could provide prices. This iterative process was repeated several times and culminated in a meeting of the national coordinators at which they agreed on the final specifications of the products to be priced.

This iterative process is based on some complex concepts underlying the preparation of the product specifications. Products can be very tightly specified, with absolute characteristics to be met for matching. An alternative is to tightly specify some characteristics, but leave some latitude to the price collectors for others. For example, the rice specification may call for long grain rice, but leave it to the price collector to determine the type and size of container and record those values along with the price. This approach provides the opportunity for the country to provide more prices. However, it can introduce more variability into the matching exercise unless prices are adjusted—for example, to standard quantities or package weights.

A presurvey is an important part of the process to define product specifications. The final test of a product specification is to determine whether price collectors in each country can actually

find and price the same product. The 2005 ICP revealed that many products had to be redefined after the first data collection because the review of the prices showed that products were not tightly specified, leading to different products being priced. In some cases, problems occurred when translating the product specifications into the local language.

Closely linked to the process to define the product specifications is determining the number of products to price within a basic heading. This step is explained in the following section and is part of the iterative process to determine the final set of products to be priced.

## Determining the Number of Products to Price

The overall reliability of the PPPs at the level of the basic heading and higher levels of aggregation depends on the interaction of several factors:

- The specificity of the price-determining characteristics—that is, rice as a product versus long grain rice parboiled and packaged as a product.
- The number of products to be priced in each basic heading, which will depend on the heterogeneity of the basic heading, the degree of overlap of products across countries, and the overlap of products each country labels as important to its economy as described in the following section.
- The importance of the basic heading as measured by its expenditure shares of consumption. Basic heading PPPs should be measured with precision for those with larger expenditure shares, because those shares receive more weight in the aggregation process.
- The sample design for the price survey, which provides the number and types of outlets to be included.

This section illustrates the sources of variability inherent in the estimation of PPPs and how to use the relative amount of variability to set targets for the number of products each country should try to price within a basic heading.

Table 7.2 is based on data from the 2005 Ring survey for the rice basic heading for six countries. The Ring survey was based on a global set of products priced by a subset of countries in each region; the purpose was to compute interregional PPPs (see chapter 8 for more details about the Ring price surveys). The basic heading PPPs for each country were used to convert the national price for each product into the currency of the base country, effectively becoming a PPP price. The geometric mean of the PPP prices for each product becomes its international price. In country B, the deviation of the PPP price for brown rice from the international price for brown rice is 0.80. The variation in the PPP product prices in country B ranges from 1.32 to 0.80. Medium grain rice in country B is relatively expensive compared with brown rice. The relative standard deviation of the residuals in country B is 0.17. The variability shown by the standard deviations in countries E and F were both around 0.30. The standard deviations, as well as the number of products within the basic heading and the number each country priced, provide guidelines for the survey framework. Note that the countries were not able to price every product; the number of products priced is a determining factor in the estimates of the sampling error.

Even though the sample of products is not from a random selection, the principles of sampling theory can be used to determine the number of products to price (see annex B for a useful

**TABLE 7.2** Variability of PPP Prices by Product and Relative Sampling Errors

	CPD residuals <sup>a</sup>					
	Country A	Country B	Country C	Country D	Country E	Country F
<i>Rice (basic heading)</i>						
Long grain, prepacked	0.95			1.31	0.66	0.69
Long grain, loose		0.88		1.00		
Basmati		1.02		1.34	1.16	
Medium grain		1.32		0.22		1.45
Short grain	1.05	1.05	1.27	0.39		
Brown		0.80	0.55	1.22	1.31	1.00
Basic heading PPP	1.795	853.1	1,047.0	4.801	19.98	319.6
Standard deviation of residuals <sup>b</sup>	0.05	0.172	0.236	0.285	0.298	0.303
Relative sampling error <sup>c</sup>	0.035	0.077	0.169	0.117	0.172	0.175
90 percent confidence interval	±0.058	±0.128	±0.282	±0.195	±0.288	±0.292

Source: ICP.

Note: CPD = Country Product Dummy.

a. Shown as the ratio of each product price converted to the currency of the base country (PPP price) to the geometric mean of the PPP prices across countries for each product. The geometric mean is the “international price” of each product.

b. Expressed as ratios, the standard deviation of the residuals provides an estimate of the variability of the relative product prices in each country.

c. Standard deviation divided by the square root of the number of products priced.

overview). Table 7B.1 in annex B shows suggested sample sizes by the desired precision, given the standard deviations of the relative prices in the basic headings. The goal is to price enough products that the sampling error of the basic heading PPP based on the product PPPs is within a target level of precision.

The standard deviation of the residuals for each country can be used as a measure of the variability stemming from the differences in product PPPs. If one assumes random sampling, inferences can be made about the precision of the estimated basic heading PPP for each country using the relative sampling error. The relative sampling error is a function of the variability of the relative product prices and the number of products priced—that is, the standard deviation divided by the square root of number of products priced. Although in table 7.2 the standard deviation for country D was only slightly less than that for country E, country D priced twice as many products, resulting in a sampling error for its PPP of 11.7 percent, compared with over 17 percent for country E. The estimated PPP for country D was thus more precise.

The relative sampling error can be used to make probability statements about the precision of the estimates of the basic heading PPPs. The last row in table 7.2 shows the confidence interval or the range within which the basic heading PPP should fall 90 percent of the time if the sampling process was repeated. The confidence interval ranges from 0.058 for country A to 0.292 for country F. The value for country F implies that the PPP for the rice basic heading could vary as much as ±30 percent with repeated sampling. If country F had priced all of the products resulting in the same standard deviation, the confidence interval would have fallen to ±20 percent. Instead, just three products were priced. Only country D priced all six products, but because of the variability of the relative prices, it has a PPP with about a 20 percent confidence band.

This discussion and review of the rice basic heading indicate the following:

- Two of the six countries priced only two products, and another two priced only three products. This finding implies that either more products should have been included, or that the product descriptions should be reviewed to make them more comparable across countries.
- Medium grain rice was priced only by three countries, but shows extreme variability—the ratios of the PPP prices to the international prices range from 0.22 to 1.45 and contribute considerably to the relative sampling errors in the countries pricing this kind of rice. This finding suggests that the product description be reviewed with each country to determine whether they were pricing the same item.
- Countries A and C, especially, should be queried to determine whether they priced only products important to their own economies rather than all available and comparable products.

Table 7B.1 in annex B is based on sampling theory and shows the relationships between the number of products, the relative standard deviations, and the target levels of precision. These relationships are used to evaluate the number of products priced for the Ring price survey for several basic headings using data in table 7B.2 in annex B. This evaluation can be used as guidelines for the number of products to be priced in the 2011 ICP round.

The fresh or chilled fruit basic heading contains 12 products, with countries pricing between 6 and 11 of them. Even though the standard deviations of the residual ratios are about as large as they are for rice, the sampling errors are considerably less because more products were priced.

The garment basic heading contains 68 products with large standard deviations. However, the sampling errors are small because of the large numbers priced by each country. The garment basic heading is very heterogeneous because it includes clothing for women, men, and children. It also has a relatively large share of the expenditures, and so it is important that the PPPs be precise.

In the electricity basic heading are only five products, which were priced by all countries except the one that priced three. All have homogeneous relative prices. Therefore, the sampling variability is very small. Products such as milk and eggs show similar patterns, suggesting that only a small number of products be selected for those basic headings.

The pharmaceutical products basic heading contains 43 products, but the countries priced only 8–19 of them. Because of these sample sizes and the variability in the relative prices, the sampling variability could be considered reasonable. In view of the importance of the basic heading and the difficulty encountered by the countries in pricing all products, the large number of products is warranted, but the specifications should be reviewed.

Table 7.3 presents the ranges of the basic heading standard deviations across countries for rice and the four basic headings just described and the suggested number of products to be priced

**TABLE 7.3** Examples of Target Numbers of Products to Price

Product	Standard deviation of relative prices	Target number of products to price	Number in 2005 Ring survey
Rice	0.05–0.30	10–15	6
Fresh or chilled fruit	0.19–0.37	10–15	12
Garments	0.24–0.30	70–100	68
Electricity	0.03–0.17	3–5	5
Pharmaceuticals	0.26–0.38	50+	43

Source: ICP.

as compared with the number included in the 2005 Ring survey. The target sample sizes are shown in ranges, using the guidelines in table 7B.1 in annex B. The larger number should be used when the basic heading has above-average expenditure shares.

The relative price levels for rice are more variable across countries, ranging from 0.05 to 0.30. This finding suggests that more than 10 products be priced unless the country or region is willing to accept a level of precision at the 15 percent rather than the 10 percent level.

Because electricity is usually furnished by a very small number of providers, there is very little variability in the rates, as evidenced by the relative standard deviations, ranging from 0.03 to 0.17 across countries (the 0.17 deviation suggests an additional review of country D's prices). With these small deviations, a country may need to price only three to five items to be 90 percent confident that the resulting PPP is within 5 percent of the target. As noted, products such as milk and eggs also exhibit very little price variability.

Another point to be considered is the relative importance of the basic heading. If the basic heading is an important part of the consumption basket, then a country would want a precise measure of the relative prices. Therefore, the country or region would target a number of products to achieve a 5–10 percent level of precision. However, if the basic heading has a very small weight, then the target level of precision could be increased to 10–15 percent so that resources can be directed toward the more important basic headings. The garment basic heading requires a large number of products because it is both heterogeneous and accounts for a significant part of household consumption expenditures.

A final point is that not every country will be able to price every product. For that reason, the target number of products will have to be increased so that each country can price the minimum number. In other words, as the number of products that overlap across countries decreases, more products will have to be defined so that each country can submit prices for a minimum number. A relevant point is that the number of products priced should be similar across countries. Because expenditure weights are not available for individual products, the only weighting is provided by the importance classification, described in the next section, and the number of products each country prices.

These guidelines to the number of products to price will now serve as the basis for the next step, which is to select the set of products to be in the regional basket for the price surveys.

## Selecting the Products to Be Priced and Classifying Them as Important or Less Important

As described in the first section of this chapter, each country begins the estimation process by submitting product specifications to its regional coordinator for those products important to its economy. Development of the regional set of products is an iterative process during which the countries and the regional coordinator reach agreement on the final list. The resulting regional set of specifications will contain products submitted by some countries that, while available in other countries, are not important to those countries.

### Background

It should be clear by now that comparability of the products being priced is an essential principle underlying the estimation of PPPs. A dilemma facing the ICP since its inception has been that even though a product may be available in several countries, it may be important or a significant part of consumption in only a few countries. Should the product PPP for a type of rice consumed widely in country A but not in country B be assigned the same weight as the type more important

in country B? To overcome this dilemma, the Eurostat-OECD in its PPP program has adopted the practice of having each country place every product being considered for inclusion in the price collection into one of two categories: (1) representative or (2) not representative but still comparable. A representative or important product is one that accounts for a significant share of a country's expenditures within a basic heading. The representative or nonrepresentative classification is determined for products within the basic heading and is country-specific.

Each country will want to price products that are purchased by a large proportion of its population and account for a significant part of the total expenditures of the basic heading. Although some of these products may be available in other countries, those countries may have other products more important to their economies. For this reason, the GEKS method was developed for the Eurostat-OECD PPP Programme. Using this method, countries classify each product as representative or nonrepresentative, which provides a form of weighting.

In the 2005 ICP, countries in the ICP regions also used the representative or nonrepresentative classification. A "representative" product was defined as one whose expenditure share was important and whose price was representative of the price level of the products in the basic heading. The countries participating in the Eurostat-OECD program and also the Commonwealth of Independent States (CIS) region have been identifying representative products for the last several years, but countries in other regions had difficulty making the distinction as it related to price levels. All countries tried to do so, but it was apparent they were using different criteria. As a result, "representativity" was not taken into account in calculating PPPs in other regions for the 2005 ICP. However, for the reasons spelled out in chapter 4, some method is still needed to give more weight to products more important to a given country.

## Classifying Products as Important or Less Important

For the 2011 ICP, countries in regions other than Eurostat-OECD and CIS will be asked to classify all goods and services in the household final consumption expenditures that are available as either important or less important. If a good or service is not available in the country, the notion of important or less important is not applicable to that good or service. Importance is defined by reference to the expenditure share of the item within a basic heading. Products that are identified as important by a country will then be given more weight in calculating its PPPs.

Defining importance by reference to expenditure shares raises an obvious problem in that countries are never asked to provide expenditure weights below the basic heading level. The basic headings are in fact defined as the most detailed level of expenditures for which countries can reasonably be asked to supply expenditure shares. Countries cannot therefore be expected to classify goods and services according to their known expenditure shares. Instead, they are asked to say whether, if expenditure shares were available at the product level, the expenditure shares for each product would be large or small within the basic heading. If it is thought that the expenditure share, if known, would probably be large, the item is classified as important; if small, it is classified as less important.

Three basic rules determine whether a product is important or less important:

1. *Is it in the consumer price index?* If an item is the same as, or very similar to, one in the country's consumer or retail price index, the country should always classify it as important. (However, products in the ICP lists but not in the CPI may still be important.)
2. *Use expert judgment or common knowledge.* Statisticians can call on their own knowledge of what are widely available and commonly purchased brands of cigarettes, soap powder,

biscuits, toothpaste, and so forth. For example, cheddar cheese might be sold in almost all food shops, but Brie is available only in specialty shops. Cheddar, then, is important, and Brie is less important. Kleenex facial tissues are sold in every supermarket and pharmacy. A “100 piece box of Kleenex facial tissues” is thus an important product and other types of tissues are less important.

3. *Ask the experts.* Most often the experts are shopkeepers. The success of their business depends on knowing which products are best sellers and which are bought less often. For example, two kinds of breakfast cereal are specified in the product list: “Kellogg’s Corn Flakes, family size” and “Kellogg’s Country Store Muesli, 500 gram packet.” The shopkeeper may say that both are best sellers and so both are important. However, it could be that only one is sold in large quantities, and so it becomes important and the other is less important.

An important product is one that has a large expenditure share within the basic heading to which it belongs. It may have a very small expenditure share within household consumption as a whole but still be important within its basic heading. For example, in many countries few people buy wine, but that does not mean that all the products specified within the wine basic heading are less important. In that heading, one or two types of wine may be best sellers, and the wine merchant can almost certainly identify them. These particular wines are important within the basic heading even though their expenditure share of total household consumption may be very small.

Several basic headings are rather heterogeneous—that is, they contain a range of products that serve different purposes. The products within heterogeneous basic headings should be split into homogeneous subgroups before deciding on importance. For example, the basic heading that includes newspapers, books, and stationery is heterogeneous and should be split into those groups before assigning importance to particular products. The garment basic heading is also heterogeneous because it includes clothing for men, women, and children. It also should be split into these three components before assigning importance.

Many of the heterogeneous basic headings are combinations of the more homogeneous and detailed ones in the Eurostat-OECD classification on which the ICP Expenditure Classification is based. The ICP Expenditure Classification shows which of these more homogeneous basic headings have been combined for the ICP regions. This guide is useful in splitting heterogeneous basic headings before allocating products to the important and less important categories.

The importance of products should be taken into account both while the product lists are being drawn up and while the prices are being validated. When the core list and the regional product lists are being drawn up, the statisticians involved must determine, by means of a presurvey, the important products for each basic heading and ensure that these products are included in the core and regional lists.

When both lists have been finalized, the country statisticians should then consider all the products within each basic heading. The lists will already include products identified as important in their countries, but now they will also include products identified as important by other countries in the region. Each of these products should be evaluated using the three basic rules just noted and be classified as either important or less important.

Being identified as less important does not mean that the product can be ignored. Countries will provide prices for all products they have identified as important. But they also are required to price products they have classified as less important in order to provide links with other countries.

Finally, the guidelines provided earlier in this chapter should be used to determine the number of products to include within a basic heading and the minimum number of products that countries should price.

## Sample Design and Determining the Number of Outlets

This section provides the guidelines needed to determine the number of outlets, their type, and their location. As stated in chapter 4, the target price is the weighted average of the prices at which a product is sold during different times of the year and around the country using the quantities purchased by month and location. This definition implies that the sample must relate to the entire country and to the entire year. In some countries, auxiliary data can be used to calibrate capital city data to the country and a point in time price to the entire year.

The required sample size is not dependent on the size of the country but on the heterogeneity of prices across the retail markets. The greater the price variability across the markets, the larger will be the sample required for the same level of precision.

Although a national annual average price must emerge from the data collection, each country must work within the framework of information available to make up a sampling frame and select the desired sales outlets. Ideally, each country should have a frame or register of all sales outlets frequented by consumers, and the volume of sales should be known for each outlet. This register could be stratified by size, or samples of outlets could be selected using probabilities proportionate to their volume of sales. The problem is that even if the measures of size were available, they may not always reflect the sales of individual products. For example, a meat market may also sell fruits and vegetables, but its volume of sales is more reflective of the meat sales. Because of cost considerations, it is good practice to price what is available in an outlet once the price collector is there.

For these reasons, a purposive sample of outlets was used for the 2005 ICP price collection, as is usually the practice for the CPI price surveys. A starting point is the frame established for the CPI (United Nations Economic Commission for Europe et al. 2009, chap. 5). One problem, though, is that the CPI price surveys in many countries are urban-based. This approach is appropriate when the relative price changes over time are the same across the urban and rural sectors. Many countries, however, have distinctive rural and urban sectors that exhibit very different pricing patterns and levels. Even though they reflect the same changes in prices over time, they may have different price levels. In these cases, the sample size for both the rural and urban price collections should be large enough to provide reliable estimates for each sector. Countries should use information from the most recent household expenditure survey to determine the relative coverage of the urban and rural sectors. Table 7B.3 in annex B is an overview of the rural expenditures as a percentage of the total for selected countries and product categories. Rural expenditures make up a large portion of the total for food items. It is also quite likely that the products consumed in rural areas may not be the same as those consumed in urban areas. And yet it is also likely that some of the products to be surveyed such as motor cars are available only in urban areas.

The subject garnering the most questions about the 2005 ICP was probably the degree of urban and rural price coverage. Table 7B.4 in annex B, provided in response to those questions, shows the urban and rural coverage by country. It reveals a lack of consistency in the coverage of rural areas, which led to questions about the reliability of the data for some purposes. Therefore, a goal for the 2011 ICP is to improve the coverage of rural areas.

**TABLE 7.4** Outlet Types and Location Indicators

Outlet type	Examples	Capital city, other urban, rural
Large shop	Supermarkets, hypermarkets, department stores	
Medium or small shop	Mini-markets, kiosks, neighborhood shops, grocery stores, convenience stores	
Market	Open markets, covered markets, wet markets	
Street outlet	Mobile shops, street vendors	
Bulk and discount store	Wholesale stores, discount stores	
Specialized store	Supply stores, hardware stores, furniture stores	
Private service provider	Taxi cabs, hotels, restaurants, private schools, private hospitals	
Public or semi-public service provider	Water suppliers, electric power companies, public schools, public hospitals	
Other kind of trade	Online (Internet) shopping sites, catalogue orders	

Source: ICP.

The selection of the outlets is especially important because different products have different distribution profiles (see table 7.4). Some products are sold mostly in supermarkets, but may also be available in a range of other outlets, from specialty shops to the local traditional markets. Prices for the same product can vary from outlet type to outlet type because of varying circumstances such as the services provided. For these reasons, the selection of outlets should take into account the different types of outlets and their relative share of the overall expenditures. This procedure will usually require expert judgment because of the lack of a sample frame with expenditures by outlet or outlet type. Some guidelines or considerations follow for the selection of outlets:

- The selection of outlets by type should be in proportion to the volume of their sales of the products to be surveyed.
- The variability of the prices within and between outlet types should be considered. The guidelines provided in annex B on the number of products to be priced apply here as well and should be used to determine the number of outlets to be included in the price collection. In other words, the expected standard deviation of product prices across outlets should be used as a guide. A useful guide if standard deviations are available is an approximation, or one-fourth (maximum price – minimum price).
- Location of the outlets, especially the urban and rural domains, should also be considered. Again, the number of outlets by location should be in proportion to each area's share of the volume of sales.
- The number of outlets or price observations that should be collected must be determined. Information is needed on the variability of the prices, and decisions must be made about the desired level of precision following the guidelines in annex A.

The advantage of selecting outlets by type and location and volume of sales is that it provides a self-weighting sample, thereby simplifying estimation of the national average prices.

In response to the questions of data users, countries are being asked to provide the following indicators for each observation of product prices for the 2011 price collection. This procedure will allow each country to break down the national average prices into urban and rural components in

order to better understand the price distributions and to respond to questions about the national coverage of the product. This information will also give each country a better understanding of how the underlying rural and urban price levels affected their PPPs.

In an ICP context, the number of outlets or price observations will depend on the required precision and the relative importance of the product in the basic heading. The size of the sample may vary from country to country. The variability of the prices among outlets also will tend to vary among countries. The appropriate size of sample will depend on the net result of a set of interacting factors, and national coordinators may wish to consult with regional coordinators on this matter. It also must be remembered that a product PPP is the ratio of the estimated average prices in two different countries. It may not be optimal for one country to spend a lot of resources achieving a high degree of precision in its estimated price for some particular product if other countries do not, or cannot, do the same. This matter may call for some collective discussion and some general guidelines at the regional level. Such guidelines would have to be specific to a particular set of countries and a particular set of products.

The difficulty and costs of collecting outlet prices could vary significantly among different types of products. When it is difficult to collect prices for a particular type of product—because, for example, the product is not very common and found only in a very few widely dispersed outlets—it may be cost-effective to not try to collect any prices for that product and concentrate on collecting prices for products that are more important and readily available. Such a strategy may increase the total number of price observations for important products, but it does risk introducing bias by reducing the number of products priced.

## Role of Data Validation in the Survey Framework

As explained at the outset of this chapter, determining the product specifications and the number of products to price, among other things, is an iterative process. It is essential that the product specifications be reviewed after the first data collection using the diagnostics from the Quaranta and Dikhanov tables described in chapter 9. In the rice example in table 7.2, the standard deviations range from 0.05 to 0.30. The medium grain product is possibly the culprit—perhaps the product specification is too “loose” or one or more countries misinterpreted the specifications. The specifications for any product resulting in relative prices with standard deviations of over 0.30 or different from those of the other countries should be examined thoroughly. It may turn out that a product is not comparable and should be removed from the list, or that it should be redefined for the next round of data collection.

The concept of importance will be used in the 2011 ICP; it will be determined by every country for every product priced. The important or less important coding should also be part of the data validation exercise to ensure it is applied consistently across countries. If important products reflect those with large expenditure shares in the basic heading, relative prices could be expected to be nearer the mean than less important products.

Because the importance coding will be finalized during data validation, countries should also be asked to price items they consider to be less important. One simple guideline: price less important items available in the outlets being surveyed for the important products. Countries should not go to great expense to add outlets specifically to price less important products.

Regional coordinators were given guidelines based on the statistical variability of the relative prices of products in each basic heading to use in determining the number of products to be priced. These guidelines, along with the relative share of the basic heading of the total expenditures,

contribute to the decision about the number of products to price. Similar principles also apply to determining the number outlets and the number of individual price observations to obtain.

The final significant requirement is that each price observation be coded to indicate the outlet type and the urban or rural dimension. This information will be helpful in determining whether a product is comparable across countries.

## Summary and Conclusions

The survey framework provides the foundation for collection of the prices that underlie the estimation of PPPs. The concept of comparability is met by very carefully describing the characteristics and attributes of each product. Because it is not possible to price every possible product available to consumers, decisions have to be made about the number to be priced in each basic heading and the strategy to use to ensure that national annual average prices are obtained. Countries differ widely in what they consume. Therefore, the relative importance of each product also needs to be considered. This chapter provides a review of these issues using data from the 2005 ICP round and how the outcome can be used to improve the results of the 2011 ICP.

## ANNEX A

### **Structured Product Descriptions**

Structure product definitions (SPDs) provide a structured method for systematically describing all price-determining characteristics for every possible product consumers can purchase. These characteristics are used to define the different kinds of milk, for example, that can be purchased. Tables 7A.1 and 7A.2 list the SPDs for milk and women's clothing.

TABLE 7A.1 Milk SPD

International Comparison of Prices Program - Structured Product Description									
ICP heading	11.01.14.1	Fresh milk							
ICP cluster	01	Fresh milk		FJ011-01A, 02A					
<b>Quantity and packaging</b>									
<b>Package type</b>									
Aseptic package									
Bag									
Boil-in bag									
Cooking bag									
Plastic (polyethylene) bag									
Vacuum-packed bricks (bags)									
Bag, type not specified,									
Other	T								
Bake 'n' serve									
Bottle or jar									
Aluminum									
Aluminum bottle									
Glass									
C3 Glass bottle									
C3 Glass jar									
Plastic									
Q2 Plastic bottle									
Squeeze bottle									
Q2 Plastic jar									
Plastic jug									
Bottle or jar, type not specified,									
Other	T								
Bottle in box									
Box									
Paperboard box									
Single unit box									
Box, type not specified,									
Other	T								
Bulk or Loose									
Bulk									
Loose, not pre-packaged									
Unpackaged (out of bin or bulk)									
Cut to order from slab									
Handpacked									
Can									
Aerosol/pressurized can									
Metal can (including aluminum)									
Can, type not specified,									
Other	T								
					09	Other	T		
<b>Serving</b>									
			Number of units in package			Size of unit		Unit of measure	
Designed for serving from package				N	*****		N	Weight	
								Grams	
								Kilograms	
								Ounces	
								Pounds	
								Other	T
<b>Labeling</b>									
			Unit package type						
Contents			Box						
Count			Packet/envelope						
Volume			Contains individually wrapped portion						
Weight								Volume	
Nutrition								D99	Milliliters
Ingredients								D99	Deciliters
								D99	Liters
								D99	Fluid ounces
								D4	Pints
								D3	Quarts
								D1, D2	Gallons
								D99	Other
									T
								Count	
								Packages	
								Pieces	

**TABLE 7A.1** Milk SPD (continued)

Source/Destination									
Domestic Import		<input type="checkbox"/>	Country (if import)		<input type="checkbox"/>	T			
Seasonal availability									
All year		<input type="checkbox"/>							
Jan		<input type="checkbox"/>	Apr		<input type="checkbox"/>	July		<input type="checkbox"/>	October
Feb		<input type="checkbox"/>	May		<input type="checkbox"/>	August		<input type="checkbox"/>	November
Mar		<input type="checkbox"/>	June		<input type="checkbox"/>	September		<input type="checkbox"/>	December
Representativity									
Representative		<input type="checkbox"/>							
Available, but not representative		<input type="checkbox"/>							
Not available		<input type="checkbox"/>							
Product characteristics (Ideally, information should be read from a label or other product documentation. If unlabeled, then value entered by collector based on respondent's assessment, or as a last resort, collector's assessment. Please note for which characteristics collector assessment had to be made in the 'Other item identifiers' section.)									
Where sold		<input type="checkbox"/>	Organic certification		<input type="checkbox"/>	Variety		Type	
A1 Sold at store		<input type="checkbox"/>	B2 Government-certified organic		<input type="checkbox"/>	C2 Whole milk		C4D4 Cow	
A2 Dairy delivered to home		<input type="checkbox"/>	B3 Other organic claim		<input type="checkbox"/>	C1 Skim/nonfat milk		Buffalo	
			TB tested		<input type="checkbox"/>	C3 Buttermilk		Goat	
						C4 Low fat milk		Camel	
						Fat content of low fat milk (%)		Sheep	
						<input type="checkbox"/>		Other	
						C4D2 Other milk-Lactose reduced			
						C4D3 Other milk-Acidophilus milk			
Features									
Fortified (Vitamins added)		<input type="checkbox"/>	Flavor		<input type="checkbox"/>	Fat content			
F1 Not fortified		<input type="checkbox"/>	Chocolate		<input type="checkbox"/>	Natural (3-4%)			
F2 Not fortified		<input type="checkbox"/>	Strawberry		<input type="checkbox"/>	15% - 2.5%			
			Other flavor		<input type="checkbox"/>	Less than 1.5%			
Reconstituted		<input type="checkbox"/>				Other		<input type="checkbox"/>	
Not reconstituted		<input type="checkbox"/>							
Pasteurised		<input type="checkbox"/>							
Not pasteurised		<input type="checkbox"/>							
Flavoured		<input type="checkbox"/>							
Unflavoured		<input type="checkbox"/>							
C5 Ultra High Temperature (UHT)		<input type="checkbox"/>							
Brand									
E99		L							
Other Features									
G99		L							
H99		L							
I99		L							
Comments									
J99		L							
K99		L							
L99		L							

Source: ICP.

AQ1 TABLE 7A.2 Women's Garment SPD

International Comparison of Prices Program - Structured Product Description							
ICP heading	11.03.12.2	Women's clothing					
ICP cluster	04	Women's shirts, blouses, other tops					AC031 - 02
Quantity and packaging							
Count	<input type="text"/>						
Pieces	<input type="text"/>						
Source/Destination							
Domestic	<input type="text"/>	Country (if import)					
Import	<input type="text"/>	A/99	<input type="text"/>	T			
Seasonal availability							
All year	<input type="text"/>						
January	<input type="text"/>	April	<input type="text"/>	July	<input type="text"/>	October	<input type="text"/>
February	<input type="text"/>	May	<input type="text"/>	August	<input type="text"/>	November	<input type="text"/>
March	<input type="text"/>	June	<input type="text"/>	September	<input type="text"/>	December	<input type="text"/>
Representativity							
Representative	<input type="text"/>						
Available, but not representative	<input type="text"/>						
Not available	<input type="text"/>						
Product characteristics							
(Ideally, information should be read from a label or other product documentation. If unlabeled, then value entered by collector based on respondent's assessment, or as a last resort, collector's assessment. Please note for which characteristics collector assessment had to be made in the 'Comments' section.)							
STYLE		BRAND/LABEL CATEGORY		SLEEVE LENGTH		FABRIC DESIGN	
A1	Blouse/shirt	C1	International	D1	Long	E1	No design/solid, single color
A2	Open-front shirt	C2	National/regional	D2	Short	E2	Printed
A3	Pullover	C3, C4, C5	Brandless	D3	Sleeveless	E3	Multicolor, fiber or yarn dyed
A4	Sweatshirt		Brand imitation	D99	Other sleeve length,	T	Jacquard or dobby design
A5	One-piece leotard				<input type="text"/>	F99	Other design,
A6	Vest						
	Salwar/Hameez						
	Salwar/Dupatta						
A99	Other top,	T					

TABLE 7A.2 Women's Garment SPD (continued)

CLOSURE			DETAILS/ FEATURES		FABRIC		NECK STYLE	
R1	No closure		UI Pleated front		AD1 Knit		AC1 Turtleneck	
R2	Single button (front or back)		VI Embroidery		AD2 Woven		AC2 Collar	
R3	Partial button front		WI Ruffles		AD99 Other fabric,		AC3 Crew neck	
R4	Full button front		XI Lace				AC4 V-neck	
R99	Other closure,	T	YI Rib knit cuffs and/or bottom				AC5 Round neck	
			AA99 Other details/features,	T			AC99 Other neck style,	T
			ABI No details/features					
SPECIFIC FIBER CONTENT			CLEANING METHOD		OTHER PRICE FACTORS		SIZE RANGE	
H99	Silk (%)	N	S1 Dry clean only				T1 Juniors	
			S2 Machine wash		AE99		T2 Petites	
I99	Rayon (%)	N	Hand wash				T3 Misses	
			S99 Other cleaning method	T	AF99		T4 Women's plus sizes	
J99	Linen (%)	N	Not labeled,	T			Small	
K99	Cotton (%)	N					Medium	
							Large	
L99	Polyester (%)	N					T99 Other size range,	T
M99	Acetate (%)	N						
N99	Acrylic (%)	N						
P99	Spandex (%)	N						
Q99	Other fiber (%)	T						
	Content not labeled (Assessed by collector)	T						
Brand/Product Name								
G99		L						
Other Item Features								
		L						
		L						
		L						
Comments								
AJ99		L						
AK99		L						
		L						

Source: ICP.

## ANNEX B

## Determining the Number of Products to Price and the Number of Price Observations

This annex provides the framework for determining the number of product specifications to be prepared by basic heading, the number of products that countries should price, and the number of price observations to be made for each product. The number of price observations will translate into the number of outlets to be selected for the price survey.

What follows examines the relationship between the size of the sample, whether it be the number of products to be priced or the number of price observations, and the probable margin of error, or precision, attached to the national annual average price or the basic heading PPP. The same points about margin of error also apply to the desired level of precision for the estimated basic heading PPPs. This analysis draws on classic sampling theory. The central limit theorem states that if a population has an arithmetic mean  $\mu$  and a finite variance  $\sigma^2$ , then the distribution of the sample mean in repeated random samples drawn from that population approaches the normal distribution with a mean  $\mu$  and a variance  $\sigma/n$  as the sample size  $n$  increases.

The sample mean provides an unbiased estimate of the population mean. The probability of the sample mean not deviating from the population mean by more than a certain amount can then be derived from the area under the normal curve. In this way, probable margins of error can be attached to sample means. An explanation of sampling errors and confidence intervals can be found in any textbook on probability and statistical theory.

In practice, the population standard deviation  $\sigma$  will not be known, but it can be estimated from the sample itself, from other samples drawn from the same population, or from previous surveys. It is convenient to replace the estimated value  $s$  of the standard deviation by its value relative to the estimated mean  $m$ —that is,  $s/m$ . This is the relative standard error as measured during price collection to determine the national average price. It also applies to the relative standard deviations of the relative prices as evaluated in the Quaranta and Dikhanov tables.

It is then possible to construct tables showing, for example, the minimum size of sample needed to ensure that the probability of the sample mean deviating from the population mean will not exceed some specified amount (see table 7B.1). The table is constructed on the assumption that a 10 percent level of significance is required. Its use may be illustrated by the following example.

**TABLE 7B.1** Sample Sizes by Target Precision and Relative Standard Deviation, with 10 Percent Significance Level

Target precision (%)	Estimated relative standard deviation: $s/m$				
	0.05	0.1	0.2	0.3	0.4
	Number of products or number of price observations				
5	3	10	45	100	176
10	1	3	10	25	100
15		1	5	10	20

Source: ICP.

Suppose that the estimated relative standard deviation,  $s/m$ , is 0.2 or 20 percent (third column) and also that the required precision level is 5 percent (first row). The entry in the first row, third column, is 45. Thus a sample of 45 is needed to ensure that there is 90 percent probability that the sample mean does not deviate from the population mean by more than 5 percent.

The greater the variance in the population, the lower is the level of precision in the estimated mean for any given size of sample. Conversely, the larger the size of the sample, the greater is the level of precision in the estimated mean achieved for any given variance in the population. The size of sample needed to achieve a given level of precision, say 5 percent, may increase sharply with the relative standard deviation—for example, when  $s/m$  increases for 0.2–0.3, the minimum sample size needed more than doubles, from 45 to 100.

Table 7B.2 shows the relative standard deviations and sampling errors for selected countries and products. The main point is that the variability in prices across basic headings differs considerably. Rice, for example, is more homogeneous than garments. Variability must be considered when determining the number of products to be priced. Tables 7B.3 and 7B.4 are described in the text.

**TABLE 7B.2** Basic Heading PPPs, Relative Standard Deviations of Product PPPs, Number of Products Priced, Relative Standard Deviations, and Sampling Errors

	Country					
	A	B	C	D	E	F
Aggregated basic heading PPPs	2.933	634.5	676.9	4.052	285.6	7.879
Relative standard deviation of basic heading PPPs	0.245	0.234	0.2856	0.2981	0.298	0.303
Basic headings						
<i>Rice (6 products)</i>						
PPP	1.794	853.146	1,046.6	4.801	19.975	319.551
Number of products priced	2	5	2	6	3	3
Relative standard deviation	0.050	0.172	0.236	0.285	0.298	0.303
Relative sampling error	0.035	0.077	0.169	0.117	0.172	0.175
<i>Fresh or chilled fruit (12 products)</i>						
PPP	1.770	384.203	327.819	1.900	15.649	276.714
Number of products priced	7	6	11	9	11	9
Relative standard deviation	0.374	0.252	0.194	0.32	0.188	0.202306
Relative sampling error	0.141	0.103	0.058	0.109	0.057	0.067
<i>Garments (68 products)</i>						
PPP	2.863	689.751	925.769	4.898	22.222	393.127
Number of products priced	38	46	47	58	54	41
Relative standard deviation	0.252	0.261	0.243	0.300	0.243	0.239
Relative sampling error	0.041	0.039	0.035	0.039	0.033	0.037
<i>Electricity (5 products)</i>						
PPP	5.674	853.378	828.622	1.2855	14.729	349.603
Number of products priced	5	5	5	5	5	3
Relative standard deviation	0.039	0.039	0.039	0.169	0.094	0.081
Relative sampling error	0.018	0.018	0.017	0.076	0.042	0.081

(continued)

**TABLE 7B.2** Basic Heading PPPs, Relative Standard Deviations of Product PPPs, Number of Products Priced, Relative Standard Deviations, and Sampling Errors  
(continued)

	Country					
	A	B	C	D	E	F
<i>Pharmaceutical products (43 products)</i>						
PPP	4.398	955.445	1212.91	7.88	18.289	310.953
Number of products priced	12	19	8	12	13	12
Relative standard deviation	0.384	0.268	0.271	0.262	0.277	0.329
Relative sampling error	0.111	0.062	0.096	0.076	0.077	0.095

Source: ICP.

**TABLE 7B.3** Rural Expenditures as a Percentage of Total, Selected Countries and Products

Basic heading items	Senegal	S. Africa	India	Indonesia	Brazil	Kazakhstan	Yemen, Rep.
Rice	51.28	43.71	67.31	57.24	24.76	45.88	36.30
Other cereals, flour, and other products	63.44	54.06	63.18	69.92	34.06	66.33	60.84
Bread	25.54	32.37	36.36	30.88	9.61	33.44	3.53
Other bakery products	68.66	15.58	51.80	40.30	16.61	37.75	34.16
Pasta products	23.30	18.61	34.65	37.91	20.29	51.18	23.97
Beef and veal	13.25	29.50	60.05	24.00	19.94	33.90	23.29
Pork	8.48	18.81	65.26	55.76	32.08	35.12	0.00
Lamb, mutton, and goat	31.39	17.01	53.20	46.05	29.41	79.06	33.72
Poultry	14.40	34.59	57.49	32.04	21.36	31.09	31.61
Other meats and meat preparations	46.37	19.34	68.68	16.35	20.99	24.11	20.61
Fresh, chilled, or frozen fish and seafood	27.42	16.31	68.68	44.34	30.50	34.62	22.85
Preserved or processed fish and seafood	46.07	41.22	59.20	50.66	15.83	20.67	31.03
Fresh milk	50.35	22.82	55.59	24.68	22.91	47.41	90.13
Preserved milk and other milk products	17.38	30.88	49.99	22.85	13.13	40.41	50.10
Cheese	1.23	13.41	0.00	3.79	13.08	19.77	17.69
Eggs and egg-based products	5.34	33.41	56.37	41.30	23.90	34.67	29.43
Butter and margarine	7.05	24.41	46.47	11.04	13.62	40.19	51.42
Other edible oils and fats	41.80	37.28	57.76	51.48	24.20	43.78	34.01
Fresh or chilled fruits	42.81	26.59	48.22	39.20	15.10	27.22	28.27
Frozen, preserved, or processed fruit and fruit-based products	71.07	18.19	45.98	44.43	28.67	27.89	35.03
Fresh or chilled vegetables other than potatoes	31.33	29.96	57.24	48.99	26.41	34.49	30.46
Fresh or chilled potatoes	26.79	38.46	66.31	50.71	23.77	42.08	30.91
Frozen, preserved, or processed vegetables and vegetable-based products	19.85	31.57	59.37	45.20	18.16	42.07	31.41
Sugar	48.32	47.72	61.93	53.15	29.83	44.48	44.66

**TABLE 7B.3** Rural Expenditures as a Percentage of Total, Selected Countries and Products (*continued*)

Basic heading items	Senegal	S. Africa	India	Indonesia	Brazil	Kazakhstan	Yemen, Rep.
Jams, marmalades, and honey	32.00	21.23	27.76	20.95	19.40	45.15	36.16
Confectionery, chocolate, and ice cream	20.27	14.41	48.26	19.30	11.76	38.17	45.14
Food products not elsewhere classified	41.94	27.50	56.42	35.98	18.72	37.95	39.13
Coffee, tea, and cocoa	50.33	31.18	48.59	45.55	22.88	44.24	45.78
Mineral waters, soft drinks, fruit and vegetable juices	16.93	22.58	29.32	13.76	11.01	29.76	20.22
Spirits	27.10	20.02	60.25	80.09	13.07	45.77	0.00
Wine	23.04	26.13	79.00	47.24	16.60	34.52	0.00
Beer	22.35	34.65	38.20	28.95	13.37	25.03	0.00
Tobacco	48.75	23.65	62.12	48.87	13.68	34.53	27.31
Clothing material, other articles of clothing, and clothing accessories	31.57	27.61	63.07	43.78	12.92	28.91	33.56
Garments	40.00	26.02	55.92	42.74	12.75	34.11	29.89
Cleaning, repair, and hire of clothing	28.58	10.77	58.69	36.92	9.16	13.55	33.84
Shoes and other footwear	29.79	27.41	50.99	40.29	12.69	36.71	31.85
Repair and hire of footwear	31.25	0.00	0.00	0.00	0.00	0.00	30.28
Actual and imputed rentals for housing	25.95	18.57	1.99	25.29	8.52	0.00	9.41
Maintenance and repair of the dwelling	59.64	14.70	63.09	37.73	13.69	0.00	21.49
Water supply	15.80	8.71	18.71	8.66	3.50	18.45	18.26
Miscellaneous services relating to the dwelling	0.00	7.09	0.00	0.00	12.01	2.23	61.10
Electricity	6.30	16.99	36.61	29.57	8.55	32.82	10.88
Gas	6.08	54.03	35.12	25.25	17.19	40.62	39.78

Source: ICP.

**TABLE 7B.4** Sales Outlet Information by Location

Country/Economy	Outlet information by location	
	Region or state or province	Urban or rural
Bangladesh	23 districts (out of 64)	urban (37 markets) and rural (20 markets), mostly included in CPI
Bhutan	20 districts + 2 big cities	2 cities, 21 urban towns, all major rural areas
Brunei Darussalam	3 districts	small country
Cambodia	capital + 5 provincial cities	urban
China	11 large cities	primarily urban
Hong Kong SAR, China		urban and rural
Macao SAR, China	entire area	
Taiwan, China	16 survey areas	urban and rural (8 cities and 34 towns/townships)

(continued)

**TABLE 7B.4** Sales Outlet Information by Location (*continued*)

Country	Outlet information by location	
	Region or state or province	Urban or rural
Fiji	2 cities + 4 towns	small country
India	22 states	31 urban centers (collect data on everything) and 201 rural villages (collect data only on food, clothing, and footwear and education)
Indonesia	28 provinces to represent urban-rural, West-East Indonesia, Java-outer islands, and large-medium cities	
Iran, Islamic Rep.	30 provinces	urban in 30 provinces (30 capitals + 50 other cities) and rural in 28 provinces (62 villages)
Lao PDR	capital + 7 provinces	urban in capital and 4 provinces and rural in 3 provinces
Malaysia	14 states	urban (36 capitals and urban centers) and rural (15 rural centers)
Maldives	capital + 4 other islands	small country
Mongolia	capital + 21 provinces	urban (capital + 2 cities) and rural (19 provinces)
Nepal	4 domains (mountain, hill, terai, Kathmandu)	urban (14 centers) and rural (17 centers)
Pakistan	4 provinces	urban (35 cities and 71 markets)
Philippines	17 regions	urban for capital and urban or rural for other regions
Singapore	throughout economy	small country
Sri Lanka	24 districts	urban and rural (17 districts are both, 3 are only urban, and 4 are only rural)
Thailand	16 provinces and capital	urban
Vietnam	20 provinces	urban and rural
Argentina	Grand Buenos Aires	urban
Bolivia	capital + 3 cities	urban
Brazil	6 major cities	urban
Chile	capital + 12 cities	urban
Colombia	capital + 3 major cities	urban
Ecuador	2 major cities	urban
Paraguay	Gran Asunción	urban
Peru	capital + 4 cities	urban
Uruguay	capital + 4 cities	urban
Venezuela, RB	Grand Caracas	urban
Austria	capital city	urban
Belgium	capital city	urban
Germany	capital city	urban
Luxembourg	capital city	urban

TABLE 7B.4 Sales Outlet Information by Location (*continued*)

Country	Outlet information by location	
	Region or state or province	Urban or rural
Netherlands	capital city with main urban areas	urban
Czech Republic	capital city	urban
Hungary	capital city	urban
Poland	capital city	urban
Slovak Republic	capital city	urban
Slovenia	capital city	urban
Switzerland	capital city	urban
Denmark	capital city	urban
Finland	capital city	urban
Ireland	capital city	urban
Sweden	capital city	urban
United Kingdom	capital city	urban
Estonia	capital city	urban
Latvia	capital city	urban
Lithuania	capital city	urban
Iceland	capital city	urban
Norway	capital city	urban
France	capital city	urban
Greece	capital city	urban
Italy	capital city	urban
Portugal	capital city	urban
Spain	capital city	urban
Cyprus	capital city	urban
Malta	capital city	urban
Bulgaria	capital city	urban
Romania	capital city with main urban areas	urban
Turkey	capital city	urban
Australia	capital city with main urban areas	urban
Canada	capital city with main urban areas	urban
Japan	capital city with main urban areas	urban
Korea, Rep.	capital city with main urban areas	urban
Mexico	capital city with main urban areas	urban
New Zealand	capital city with main urban areas	urban
United States	capital city with main urban areas	urban
Israel	capital city with main urban areas	urban
Albania	capital city	urban
Bosnia and Herzegovina	capital city	urban
Croatia	capital city	urban
Macedonia, FYR	capital city	urban

*(continued)*

TABLE 7B.4 Sales Outlet Information by Location (*continued*)

Country	Outlet information by location	
	Region or state or province	Urban or rural
Montenegro	capital city	urban
Serbia	capital city	urban
Armenia	throughout country	
Belarus	throughout country	
Kazakhstan	throughout country	
Kyrgyz Republic	throughout country	
Moldova	throughout country	
Azerbaijan	capital city	urban
Ukraine	capital city	urban
Georgia	capital city	urban
Russian Federation		
Tajikistan	food throughout country, but others in Dushanbe	
Angola	9 provinces	urban (provincial capital) + 2–3 rural areas accessible from the provincial capital
Benin	all 12 departments	urban (urban centers) and rural (villages closest to urban centers)
Botswana	every census district: at least one collection center (32, 52% population and 69% consumption)	urban (all towns or cities, 100%, and some urban villages, 63%) and rural (villages, 4%)
Burkina Faso	10 regions	regional center and adjacent rural area with largest population within a radius of about 20 km
Burundi	7 zones	urban (urban centers)
Cameroon	all 10 regions	urban (10 urban centers) and rural (10 rural areas)
Cape Verde	3 islands	urban and rural on all three islands
Central African Republic	7 administrative regions/10 prefectures	urban (urban centers) and rural (rural locality closest to urban centers)
Chad	8 regions	urban and additional rural markets
Comoros	all 3 islands	urban and rural (331 towns or villages)
Congo, Dem. Rep.	11 provinces	urban (10 centers) and rural (10 centers)
Congo, Rep.	11 departments	urban (6 centers) and rural (20 locations)
Côte d'Ivoire	capital + all 9 other regions	urban (10 regional centers) and rural (9 largest prefectures near regional centers)
Equatorial Guinea	6 provinces/8 municipalities	urban or rural
Egypt, Arab Rep.	11 governorates (66 collection centers)	urban (2 governorates) and urban and rural (9 governorates)
Ethiopia	13 regions	Addis + 12 urban areas + new rural areas
Gabon	5 zones + 2 largest cities	urban (123 outlets) and rural (only weekly markets, 7)
Gambia, The	all 8 regions/8 local government areas	

**TABLE 7B.4** Sales Outlet Information by Location (*continued*)

Country	Outlet information by location	
	Region or state or province	Urban or rural
Ghana	10 regions	41 urban + 19 rural markets
Guinea	capital + 4 zones	urban and rural (1 regional capital and 1 rural weekly market nearby for each zone)
Guinea-Bissau	capital + 7 regions	urban and rural (except for capital, all regions have both)
Kenya	all regions	Nairobi (10 areas) + 15 urban centers + 10 new rural centers
Lesotho	all 10 regions	urban + additional 1–2 villages for each region
Liberia	all 5 regions	urban (5 largest towns in regions) and rural (rural area surrounding largest town)
Madagascar	6 provinces	urban (7 large urban centers, 8 other urban centers) and rural (25 rural locations)
Malawi	all 27 districts (except Island of Likoma)	urban and rural: 4 cities and 29 rural centers (6 total for districts: 4 cities + 1 each for other districts)
Mali	capital + 8 regions	urban and rural
Mauritania	13 regions	urban (13 regional centers) and rural (5 rural centers in 3 regions)
Mauritius	all 10 districts	urban and rural
Morocco	8 regions	urban (8 regional centers) and rural (14 rural markets)
Mozambique	4 provinces	urban (4 cities) and rural (2 villages in each province)
Namibia	3 zones (9 out of 13 regions)	urban (capital) and surrounding rural areas
Niger	capital + 7 administrative regions	urban (capital + 7 regional centers) and rural (7 largest rural weekly markets nearby)
Nigeria	6 zones	46 rural centers and 23 urban centers sampled within 6 zones and by urban/rural (to achieve 5 price observations per center per item)
Rwanda	capital + all 12 provinces	urban (capital + 12 provincial centers + 3 other cities) and rural (1 location in each province)
São Tomé and Príncipe	2 islands/8 districts	urban (29 centers) and rural (14 centers)
Senegal	5 regions	urban (8 centers) and rural (5 centers)
Sierra Leone	4 provinces/regions	urban (5) and rural (3) collection centers
South Africa	9 provinces	urban (50 collection centers)
Sudan	16 states (northern Sudan)	urban (28 largest markets in state capital cities + 1 additional market in other town for each state) and rural (additional 2 rural village markets for each state)
Swaziland	10 towns	urban (10 centers) and rural (9 centers)

*(continued)*

**TABLE 7B.4** Sales Outlet Information by Location (*continued*)

Country	Outlet information by location	
	Region or state or province	Urban or rural
Tanzania	7 zones (11 regions)	urban (11 out of 20 CPI centers) and rural (1 center each for the same 10 regions, each with 4 villages having weekly markets)
Togo	capital + 5 regions	urban and rural
Tunisia	7 regions/24 governorates	urban and rural
Uganda	capital + 4 zones	urban (6 urban centers + 1 more in northern zone) and rural (8 centers)
Zambia	all 9 provinces (41 districts)	urban (10 centers) and rural (38 centers)
Zimbabwe	all 10 provinces	urban (88 centers) and rural (32 centers)
Bahrain		urban
Egypt, Arab Rep.	3 regions	urban/rural
Iraq	capital + several large cities	urban
Jordan	3 regions/all kingdom governors (12)	urban/rural
Kuwait		urban
Lebanon	5 regions	mostly urban with some coverage of rural towns
Oman	6 regions	urban
Qatar	3 regions	urban
Saudi Arabia	most regions	mostly urban with some rural coverage (Bedouin villages) for some groups
Syrian Arab Republic	Damascus metropolitan area	mostly urban with relatively low coverage of rural areas
Yemen, Rep.	most regions	mostly urban with some rural coverage for some groups

Source: ICP.

Note: CPI = consumer price index.

## REFERENCES

United Nations Economic Commission for Europe, International Labour Organization, International Monetary Fund, Organisation for Economic Co-operation and Development, Statistical Office of the European Communities, World Bank, and Office for National Statistics, United Kingdom. 2009. *Practical Guide to Producing Consumer Price Indices*. New York and Geneva: United Nations.

World Bank. 2007. *ICP 2005 Methodological Handbook*. <http://web.worldbank.org/WBSITE/EXTERNAL/DATASTATISTICS/ICPEXT/0,,contentMDK:20126612~pagePK:60002244~piPK:62002388~theSitePK:270065,00.html>.