

Reference PPPs

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In the 2005 International Comparison Program (ICP), the gross domestic product (GDP) was broken down into 155 basic headings covering all final expenditures on GDP: consumption expenditures, capital formation, and the trade balance. The standard procedure was to calculate purchasing power parities (PPPs) by comparing the prices of a selection of the goods and services. However, just as in all previous rounds of the ICP, prices were not collected in the 2005 ICP for goods and services representing all 155 basic headings, mainly because it would have been too expensive and even impossible. In addition, for some basic headings no prices were available—the gross operating surplus of government is one example. For basic headings for which no price data were collected, purchasing power parities were calculated by using reference PPPs¹—that is, PPPs based on one or more other basic headings that had already been calculated.

It would, of course, be possible to calculate overall PPPs without taking into account the basic headings for which no prices were collected. The expenditure shares of these PPPs would be dropped and PPPs calculated only for the remaining basic headings for which prices were actually collected. But this was not done because users want the results to reflect the full GDP. Reference PPPs have been used in all previous rounds of the ICP and will be used again in the 2011 round.

The countries agreed on which basic headings would be covered by reference PPPs, but the regional coordinators made the decisions on which PPPs to use as reference PPPs. Reference PPPs were introduced into the calculations when the regional coordinators were calculating PPPs for their region. Reference PPPs are more of an issue for the regional offices and the ICP Global Office than for the participating countries.

The purpose of this chapter is to explain which reference PPPs were used in 2005 ICP, how much of GDP was covered by reference PPPs, and what the difference would have been had PPPs been calculated using only the price data actually collected. A final section considers whether any changes should be made in the use of reference PPPs for the 2011 ICP.

Different Kinds of Reference PPPs

Reference PPPs can be categorized as follows:

- Price-based reference PPPs
 - Specific
 - Neutral
- Volume-based reference PPPs
- Exchange rate reference PPPs.

The sections that follow describe these reference PPPs.

Price-Based Reference PPPs

Virtually all the reference PPPs used for the ICP are price-based rather than volume-based. They are price relatives (PPPs) that have already been calculated by comparing the prices of goods and services classified under other basic headings. Some are PPPs of basic headings that are thought to be similar to those for which no prices have been collected. “Similar” means here that if the missing prices were available, it is likely that their price relatives vis-à-vis other countries would be close to the PPPs of the basic heading selected as the reference PPP. These PPPs are referred to here as *specific* reference PPPs. They may be the PPPs for a single basic heading or an average of the PPPs for several basic headings. In latter case, they will be geometric averages of the selected PPPs weighted by expenditure shares.

In other cases, reference PPPs are the PPPs of a large group of basic headings such as all the basic headings under gross fixed capital formation for which prices have been collected. In this case, the purpose is to ensure that the use of a reference PPP will not change the PPP for that larger group. These are referred to here as *neutral* reference PPPs because the intention is that they have no impact on the PPPs of the larger group of basic headings.

Here are some examples of specific and neutral price-based reference PPPs used in the 2005 round of the ICP:

- Specific price-based reference PPPs
 - PPP for the basic heading actual and imputed rentals for housing used as the reference PPP for the basic heading miscellaneous services relating to the dwelling
 - PPP for the basic heading recreational and sporting services used as the reference PPP for the basic heading games of chance
 - Geometric, weighted averages of all basic headings under transport and restaurants and hotels used as the reference PPP for the basic heading package holidays.
- Neutral price-based reference PPPs:
 - PPP for household final consumption expenditure on the domestic market (excluding health and education basic headings and reference PPP basic headings) used as the reference PPP for the basic heading narcotics
 - PPPs for gross fixed capital formation used as reference PPPs for the basic heading other products (part of gross fixed capital formation)
 - PPP for household consumption expenditure (excluding reference PPP basic headings) used as the reference PPP for the basic heading social protection (part of household consumption expenditure).

Volume-Based Reference PPPs

In previous rounds of the ICP, reference PPPs were always based on other PPPs—that is, on price relatives. For the 2005 ICP, the Asia-Pacific and Africa regions² used reference volume relatives for the basic heading actual and imputed rentals for housing (dwelling services for short). This was the first time this procedure was used for the ICP.

The standard procedure for calculating PPPs for dwelling services is to compare the rents paid in different countries for similar types of dwellings as described in chapter 12 on dwelling services. In many countries, this procedure is not feasible because almost all dwellings are occupied by their owners, and so there is only a small and unrepresentative rental market. To deal with this situation, an alternative method was recommended for the 2005 ICP in which PPPs for dwelling services were obtained by first calculating volume relatives based on the quality-adjusted quantities of dwellings in each country. These volume relatives were then divided into expenditure relatives to obtain PPPs. In both Asia-Pacific and Africa, it was found that neither of these methods could be used; the data on actual rents, housing expenditures, and the quantity and quality of dwellings were judged to be too unreliable. In this situation, the only solution was to use some kind of reference PPP.

A first suggestion was to use the overall PPP for household final consumption expenditure (HFCE, calculated with expenditure on dwelling services omitted) as the reference PPP for dwelling services. The overall PPP for household consumption expenditure would not be affected by using a neutral PPP of this kind. The problem, however, was that country estimates of expenditures on dwelling services were thought to be very unreliable in both the Asia-Pacific and Africa regions. Dividing badly estimated expenditure relatives by neutral price relatives would necessarily produce unreliable volume relatives, thereby distorting the HFCE aggregate in real terms. But this was not desirable because the main objective of the ICP is to produce good volume comparisons between countries. The problem can be explained as follows:

$$\frac{\text{expenditure on } DS \text{ in country } A}{\text{expenditure on } DS \text{ in country } B} \div \frac{\text{price of } DS \text{ in country } A}{\text{price of } DS \text{ in country } B} = \frac{\text{volume of } DS \text{ in country } A}{\text{volume of } DS \text{ in country } B}$$

DS refers to dwelling services. The first term in the equation is an expenditure relative known from the national accounts of countries *A* and *B*. The second term is the price relative (or PPP)—that is, the price of dwelling services in country *A* divided by the price of dwelling services in country *B*. Dividing the expenditure relative by the price relative gives the volume relative shown on the right-hand side. If the expenditure relative is unreliable, dividing it by a neutral price relative will transfer that unreliability to the volume relative. The alternative is to use a neutral volume relative on the right-hand side so that the unreliability inherent in the expenditure relative is transferred to the price relative (or PPP).³ Because of the higher priority attached to the volume comparisons than to the PPP, this alternative was accepted as the lesser of two evils. The relative volume of household consumption expenditures was used as the reference volume relative for dwelling services, and an (unreliable) PPP was obtained by dividing this volume relative into the expenditure relative.

Exchange Rate Reference PPPs

Exchange rates were used for the two basic headings exports of goods and services and imports of goods and services and for the two basic headings final consumption expenditure of resident

households in the rest of the world and final consumption expenditure of nonresident households in the economic territory.⁴ Although exchange rates are described here as reference PPPs, many observers would dispute this. They would argue that, by definition, the exchange rate is the PPP for all imports and exports, including those that are purchased directly by households when they travel abroad.

An alternative view is possible for PPPs for foreign trade, however. If exports and imports are treated in exactly the same way as other products, the PPPs so obtained would not necessarily be the same as exchange rates. To take a simple example, suppose two countries export an identical type of banana and use the same currency such as the CFA (Central African franc). If trade were entirely free, the f.o.b. (free on board) export prices of a ton of bananas would necessarily be the same in the two countries—if not, the country with the higher f.o.b. price would never export any bananas. And in this situation, the exchange rates would indeed equal the PPPs calculated as their price relatives: both would be unity in this case. But, in practice, markets are not free, and those for many internationally traded goods are regulated by special trade agreements—bananas being a particular case in point. In addition, the c.i.f. (cost, insurance, and freight) prices of a ton of these bananas would not be the same in the importing countries because, apart from differences in the f.o.b. prices, the international freight and insurance costs may also differ. In short, if PPPs were calculated for banana exports and imports by comparing, respectively, f.o.b. and c.i.f. prices, it is certain that they would not equal exchange rates in all cases.

Purchases by residents abroad and purchases by nonresidents in the domestic territory can also be treated with PPPs different from exchange rates. These are basically tourist expenditures on things such as transport, hotels, and restaurant meals. The bilateral PPP for hotel rooms or train tickets purchased by nonresidents in country *A* is the ratio of the prices in country *A* divided by the prices of a similar hotel room or train journey purchased by nonresidents in country *B*. There is no reason to expect that this PPP would be the same as exchange rates.

For exports and imports, it would be very expensive to collect prices in order to calculate PPPs in the same way as for other items of final expenditure, and the use of exchange rates can be justified on practical grounds. For net purchases by residents abroad, however, the alternative just provided may be preferable to the use of exchange rates. In any event, it appears to be correct to regard exchange rates as reference PPPs rather than as true, measured PPPs.

Basic Headings for Which Reference PPPs Were Used in ICP 2005

Table 17.1 shows the basic headings for which each of the six regions used reference PPPs in the 2005 ICP. The kinds of reference PPPs used are indicated: volume-based (V), price-based specific (S), price-based neutral (N), and exchange rates (X).

Reference PPPs were the least used in South America (32 basic headings) and the most used in Western Asia (39 basic headings). They were used for most of the basic headings under government and for a substantial number of basic headings under household expenditure. In all regions except Western Asia, neutral reference PPPs were used more often than specific reference PPPs. Western Asia used reference PPPs for more basic headings than the other regions, but tried to find specific rather than neutral reference PPPs for most of them.

TABLE 17.1 Basic Headings for Which Reference PPPs Were Used in ICP 2005 by Region

Code	Basic heading	Eurostat— OECD	CIS	Asia- Pacific	Africa	Western Asia	South America
HOUSEHOLDS							
110231.1	Narcotics	N	N				
110411.1	Actual and imputed rentals for housing			V	V		
110441.1	Water supply					N	
110442.1	Miscellaneous dwelling services	S	S	S	S	N	S
110513.1	Repair of furniture			S	S	S	S
110533.1	Repair of household appliances			S	S	S	S
110562.1	Domestic services			S	S		
110562.2	Household services			S	S	S	S
110631.1	Hospital services	S	S				
110712.1	Motorcycles			S	S	S	S
110714.1	Animal-drawn vehicles	N	N			S	
110731.1	Passenger transport by railway					S	
110734.1	Passenger transport by sea			S	S	S	S
110735.1	Combined passenger transport			S	S	S	S
110736.1	Other transport services			S	S		S
110921.1	Major durables for recreation			S	S		S
110923.1	Maintenance of other major durables					S	
110933.1	Garden and pets			N	N		N
110935.1	Veterinary and pet services			N	N	S	N
110943.1	Games of chance	N	N	N	N	S	N
110961.1	Package holidays	S	S				
111011.1	Education	S	S				
111221.1	Prostitution	N	N				
111241.1	Social protection	N	N	N	N	N	N
111251.1	Insurance	N	N	N	N	N	N
111261.1	FISIM	N	N	N	N	N	N
111262.1	Other financial services			N	N	N	N

(continued)

TABLE 17.1 Basic Headings for Which Reference PPPs Were Used in ICP 2005 by Region
(continued)

Code	Basic heading	Eurostat— OECD	CIS	Asia- Pacific	Africa	Western Asia	South America
111271.1	Other services			N	N	N	N
111311.1/2	Net purchases by residents in the rest of the world	X	X	X	X	X	X
NONPROFIT INSTITUTIONS SERVING HOUSEHOLDS (NPISH)							
120111.1	NPISH consumption	N	N				
GOVERNMENT							
130111.1	Housing	S	S				
130212.4	Hospital services	S	S				
130222.1	Intermediate consumption: health	N	N	N	N	N	N
130223.1	Gross operating surplus: health	S	S	S	S	S	S
130224.1	Net taxes on production: health	S	S	N	N	N	N
130225.1	Receipts from sales: health	S	S	N	N	N	N
130311.1	Recreation and culture	N	N	S			
130411.1	Education benefits and reimbursements	S	S				
130422.1	Intermediate consumption: education	N	N	N	N	N	N
130423.1	Gross operating surplus: education	S	S	S	S	S	S
130424.1	Net taxes on production: education	S	S	N	N	S	N
130425.1	Receipt from sales: education	S	S	N	N	S	N
130511.1	Social protection	N	N				
140112.1	Intermediate consumption: collective services	N	N	N	N	N	N
140113.1	Gross operating surplus: collective services	S	S	S	S	S	S
140114.1	Net taxes on production: collective services	S	S	N	N	S	N
140115.1	Receipts from sales: collective services	S	S	N	N	S	N

TABLE 17.1 Basic Headings for Which Reference PPPs Were Used in ICP 2005 by Region
(continued)

Code	Basic heading	Eurostat— OECD	CIS	Asia- Pacific	Africa	Western Asia	South America
GROSS FIXED CAPITAL FORMATION							
150111.1	Fabricated metal products					S	
150115.1	Other manufactured goods					S	
150121.2	Other road transport					S	
150122.1	Other transport equipment	N	N			S	
150311.1	Other products	N	N	N	N		N
INVENTORIES AND VALUABLES							
160111.1/2	Change in inventories	S	S	S	S	S	S
160211.1/2	Net acquisitions of valuables	S	S				
BALANCE OF EXPORTS AND IMPORTS							
170111.1/2	Net exports of goods and services	X	X	X	X	X	X
Total number of reference PPPs		34	34	35	34	39	32
Of which — are reference volume relative				1	1		
Reference PPPs: specific		14	14	14	13	25	12
Reference PPPs: neutral		20	20	18	18	12	18
Exchange rates		2	2	2	2	2	2

Source: ICP 2005.

Note: V = reference volume relative; S = specific reference PPP; N = neutral reference PPP; X = market exchange rate; FISIM = financial intermediation services indirectly measured.

What Were the Reference PPPs?

The 2005 “ICP Operational Manual” (World Bank 2005) provides guidelines on the basic headings for which reference PPPs could be used and suggests the reference PPPs to be used in each case. Table 17.2 shows the PPPs recommended in the *ICP 2005 Methodological Handbook* (World Bank 2007).

Specific reference PPPs are highlighted in the table. The distinction between specific and neutral reference PPPs is usually obvious, but there are some borderline cases. For example, gross fixed capital formation is shown as a *neutral* reference PPP in table 17.2 when it is used for the basic heading other products (capital formation,) but when it is used as a reference PPP for government gross operating surplus it is shown as a *specific* reference PPP. In the first case, the intention was most likely to avoid affecting the PPP for gross fixed capital formation (hence it is a neutral reference PPP), whereas in the second case it is used because the price relatives of gross fixed capital formation are assumed to be similar to those of consumption of fixed capital, which is by far the

TABLE 17.2 Reference PPPs Recommended by the Global Office for ICP 2005

Code	Basic heading	Reference PPPs
110231.1	Narcotics	PPPs for individual consumption expenditure by households (excluding health and education basic headings and reference PPP basic headings)
110442.1	Miscellaneous dwelling services	PPPs for actual and imputed rents
110631.1	Hospital services	PPPs for production of health services by government (without net taxes on production and receipts from sales)
110714.1	Animal-drawn vehicles	PPPs for individual consumption expenditure by households (excluding health and education basic headings and reference PPP basic headings)
110943.1	Games of chance	PPPs for individual consumption expenditure by households (excluding health and education basic headings and Eurostat-OECD reference PPP basic headings)
110961.1	Package holidays	Weighted average of PPPs for transport services and restaurants and hotels
111011.1	Education	PPPs for production of education services by government (without net taxes on production and receipts from sales)
111221.1	Prostitution	PPPs for individual consumption expenditure by households (excluding health and education basic headings and reference PPP basic headings)
111241.1	Social protection	PPPs for government final consumption expenditure (excluding social protection, recreation and culture, and housing)
111251.1	Insurance	PPPs for individual consumption expenditure by households (excluding health and education basic headings and reference PPP basic headings)
111261.1	FISIM	PPPs for individual consumption expenditure by households (excluding health and education basic headings and reference PPP basic headings)
111311.1	Expenditures by residents in the rest of the world	Exchange rates
111311.2	Expenditures by nonresidents in the economic territory	Exchange rates
120111.1	NPISH consumption	PPPs for government final consumption expenditure (excluding social protection, recreation and culture, and housing)
130111.1	Housing (government)	PPPs for actual and imputed rents
130212.4	Hospital services (government)	PPPs for production of health services by government (without net taxes on production and receipts from sales)
130222.1	Intermediate consumption: health services	PPPs for individual consumption expenditure by households (excluding health and education basic headings and reference PPP basic headings)
130223.1	Gross operating surplus: health services	PPPs for gross fixed capital formation
130224.1	Net taxes on production: health services	PPPs for production of health services by government (without net taxes on production and receipts from sales)
130225.1	Receipts from sales: health services	PPPs for production of health services by government (without net taxes on production and receipts from sales)

TABLE 17.2 Reference PPPs Recommended by the Global Office for ICP 2005 (*continued*)

Code	Basic heading	Reference PPPs
1303111	Recreation and culture	PPPs for government final consumption expenditure (excluding social protection, recreation and culture, and housing)
1304111	Education benefits and reimbursements	PPPs for production of education services by government (without net taxes on production and receipts from sales)
1304221	Intermediate consumption: education	PPPs for individual consumption expenditure by households (excluding health and education basic headings and reference PPP basic headings)
1304231	Gross operating surplus: education	PPPs for gross fixed capital formation
1304241	Net taxes on production: education	PPPs for production of education services by government (without net taxes on production and receipts from sales)
1304251	Receipt from sales: education	PPPs for production of education services by government (without net taxes on production and receipts from sales)
1305111	Social protection	PPPs for government final consumption expenditure (excluding social protection, recreation and culture, and housing)
1401121	Intermediate consumption: collective services	PPPs for individual consumption expenditure by households (excluding health and education basic headings and reference PPP basic headings)
1401131	Gross operating surplus: collective services	PPPs for gross fixed capital formation
1401141	Net taxes on production: collective services	PPPs for production of collective services by government (without net taxes on production and receipts from sales)
1401151	Receipts from sales: collective services	PPPs for production of collective services by government (without net taxes on production and receipts from sales)
1501221	Other transport equipment	PPPs for gross fixed capital formation
1503111	Other products (GFCF)	PPPs for gross fixed capital formation
1601111	Opening value of inventories	Weighted average of PPPs for consumer goods and equipment goods
1601112	Closing value of inventories	Weighted average of PPPs for consumer goods and equipment goods
1602111	Acquisitions of valuables	PPPs for jewelry, clocks, and watches
1602112	Disposals of valuables	PPPs for jewelry, clocks, and watches
1701111	Exports of goods and services	Exchange rates
1701112	Imports of goods and services	Exchange rates

Source: ICP 2005.

Note: FISIM = financial intermediation services indirectly measured; NPISH = nonprofit institutions serving households; GFCF = gross fixed capital formation.

largest item in the gross operating surplus of government. Another example is provided by PPPs for production of education services by government; they are used as reference PPPs for net taxes on production: education. Here they are shown as *specific* PPPs on the assumption that they have been selected because their price relatives are assumed to be similar to those for the production of education services. However, it could equally well be that PPPs for production of education services by government were selected as reference PPPs because that would have a neutral effect on the overall PPP for government education services.

This list of basic headings and the recommended reference PPPs were based on the experience of the Eurostat-OECD group. The CIS region followed these guidelines strictly, but, as can be seen in table 17.1, other regions did not. The reference PPPs used by each region are shown in annex A. The main departures from table 17.2 can be summarized as follows:

- Most regions used more reference PPPs than recommended for the household consumption expenditure. These were mostly basic headings for services rather than goods—domestic, household, repair, financial, and insurance services were covered by reference PPPs in all regions except the Eurostat-OECD and CIS. In general, they were also basic headings with rather low expenditure weights, and so the regions concerned decided it was not a good use of scarce resources to price items under these basic headings.
- For the government consumption expenditure, the Asia-Pacific, Africa, Western Asia, and South America regions are shown as using fewer reference PPPs than the Eurostat-OECD and CIS regions, mainly because the missing basic headings such as housing, social protection, and recreation and culture carried zero or near zero expenditure weights and so were ignored.

The neutral PPP most commonly recommended in the ICP manual was PPPs for the individual consumption expenditure by households (excluding the health and education basic headings and reference PPP basic headings).

Table 17.3 shows the percentages of GDP covered by reference PPPs in each region and the relative importance of the basic headings for which reference PPPs were used. As an indication of their relative importance, basic headings accounting for more than 0.5 percent of GDP are highlighted. According to the table, the following basic headings accounted for more than 0.5 percent of GDP in at least half of the regions:

- Maintenance and repair of the dwelling
- Social protection (under household consumption)
- Insurance
- Intermediate consumption: health services
- Intermediate consumption: education services
- Intermediate consumption: collective services
- Gross operating surplus: collective services
- Receipts from sales: collective services
- Other products (under gross fixed capital formation)
- Changes in inventories

In addition, the two foreign balances for which exchange rate reference PPPs were used also accounted for large shares of GDP, as did the basic heading for actual and imputed rentals for housing. Reference volume relatives were used for this basic heading in the Asia-Pacific and Africa regions.

TABLE 17.3 Percentage of GDP Accounted for by Reference PPPs in ICP 2005

	Eurostat- OECD	CIS	Asia- Pacific	Africa	Western Asia	South America	All regions ^a
Household final consumption expenditure							
110410 Actual and imputed rentals for housing			6.37	4.54			5.46
110430 Maintenance and repair of the dwelling	0.61	1.73	0.53	0.54	0.41	0.53	0.72
110440 Water supply and misc. services relating to the dwelling					0.45		0.45
110442 Miscellaneous services relating to the dwelling	0.38	0.14	0.18	0.25	0.25	0.13	0.22
110513 Repair of furniture, furnishings, and floor coverings			0.02	0.12	0.08	0.04	0.06
110533 Repair of household appliances			0.03	0.07	0.07	0.07	0.06
110562.1 Domestic services			0.30	0.42			0.36
110562.2 Household services			0.08	0.16	0.12	0.02	0.10
110630 Hospital services	1.14	0.68					0.91
110712 Motorcycles			0.49	0.12	0.02	0.13	0.19
110731 Passenger transport by railway					0.00		0.00
110734 Passenger transport by sea and inland waterway			0.08	0.09	0.00	0.03	0.05
110735 Combined passenger transport			0.00	0.16	0.08	0.02	0.06
110736 Other purchased transport services			0.11	0.34		0.05	0.17
110921 Major durables for outdoor and indoor recreation			0.05	0.13		0.02	0.07
110933 Gardens and pets			0.06	0.08		0.12	0.09
110935 Veterinary and other services for pets			0.02	0.07	0.01	0.02	0.03
110943 Games of chance	0.56	0.08	0.36	0.17	0.00	0.15	0.22
110960 Package holidays	0.41	0.14					0.27
111000 Education	1.58	1.77					1.68
111220 Prostitution	0.03	0.00		0.01		0.00	0.01
111240 Social protection	1.72	0.85	0.73	0.39	0.34	0.21	0.71
111250 Insurance	1.10	0.16	0.52	0.24	0.17	0.67	0.48
111261 FISIM	0.64	0.00	0.48	0.25	0.49	0.26	0.35
111262 Other financial services n.e.c.			0.17	0.32	0.13	0.45	0.35
111270 Other services n.e.c.			0.62	0.32	0.22	1.03	0.52
111300 Net purchases abroad	-1.38	0.61	0.00	-0.75	0.21	0.00	-0.22
Government final consumption expenditure							
130222 Intermediate consumption: health services	0.94	0.97	0.47	0.31	0.97	0.90	0.76
130223 Gross operating surplus: health services	0.13	0.20	0.02	0.14	0.05	0.11	0.11
130224 Net taxes on production: health services	0.02	0.14	0.00	0.05	0.00	0.01	0.04
130225 Receipts from sales: health services	-0.26	-0.06	0.00	-0.05	-0.16	-0.07	-0.10

(continued)

TABLE 17.3 Percentage of GDP Accounted for by Reference PPPs in ICP 2005 (*continued*)

	Eurostat- OECD	CIS	Asia- Pacific	Africa	Western Asia	South America	All regions^a
130422 Intermediate consumption: education services	0.88	1.28	0.62	0.51	0.56	0.43	0.72
130423 Gross operating surplus: education services	0.28	0.27	0.06	0.28	0.15	0.12	0.19
130424 Net taxes on production: education services	0.02	0.01	0.00	0.04	0.07	0.01	0.03
130425 Receipts from sales: education services	-0.38	-0.30	0.00	-0.09	-0.45	-0.14	-0.23
140112 Intermediate consumption: collective services	3.85	3.61	3.01	3.97	5.19	2.72	3.72
140113 Gross operating surplus: collective services	1.23	0.79	0.27	1.49	0.49	0.46	0.79
140114 Net taxes on production: collective services	0.03	0.02	0.09	0.31	0.00	0.04	0.08
140115 Receipts from sales: collective services	-1.20	-0.36	0.00	-0.57	-0.86	-0.52	-0.58
Gross fixed capital formation							
150300 Other products	1.65	1.81	2.28	0.93		0.76	1.50
Changes in inventories and valuables							
160000 Change in inventories and valuables	1.29	2.29	2.22	2.00	0.84	0.76	1.57
Balance of exports and imports							
180000 Balance of exports and imports	-3.18	-7.53	1.89	-8.10	9.92	4.17	-0.47
Total of above	13.57	10.20	22.42	9.58	21.60	14.14	15.25
Reference PPPs without changes in inventories and valuables, the balance of exports and imports, and net purchases abroad	16.85	14.83	18.30	16.42	10.63	9.21	14.37

Source: ICP 2005.

Note: FISIM = financial intermediation services indirectly measured; n.e.c. = not elsewhere classified.

a. Averages for the regions using reference PPPs.

The last two lines of table 17.3 summarize the importance of reference PPPs in each region and for all regions together. Shown on the first line, “total of above,” are the sums of the percentages in each column. Those sums include the three balance items: the changes in inventories and valuables, the net exports of goods and services, and the net purchases abroad by residents. This means that a region that made extensive use of reference PPPs for the nonbalance basic headings will seem to have made little use of them if these balance items were negative. For example, Africa, as a region, reported a larger negative trade balance, which gives the false impression that Africa made little use of reference PPPs. Western Asia, by contrast, had a large positive trade balance, which exaggerates the use made of reference PPPs in that region.

The last line omits these balance items and gives a better picture of the extent to which reference PPPs were used in the different regions. Overall, just over 14 percent of GDP was covered by reference PPPs, with South America having the lowest coverage at 9 percent and Asia-Pacific twice that at 18 percent.

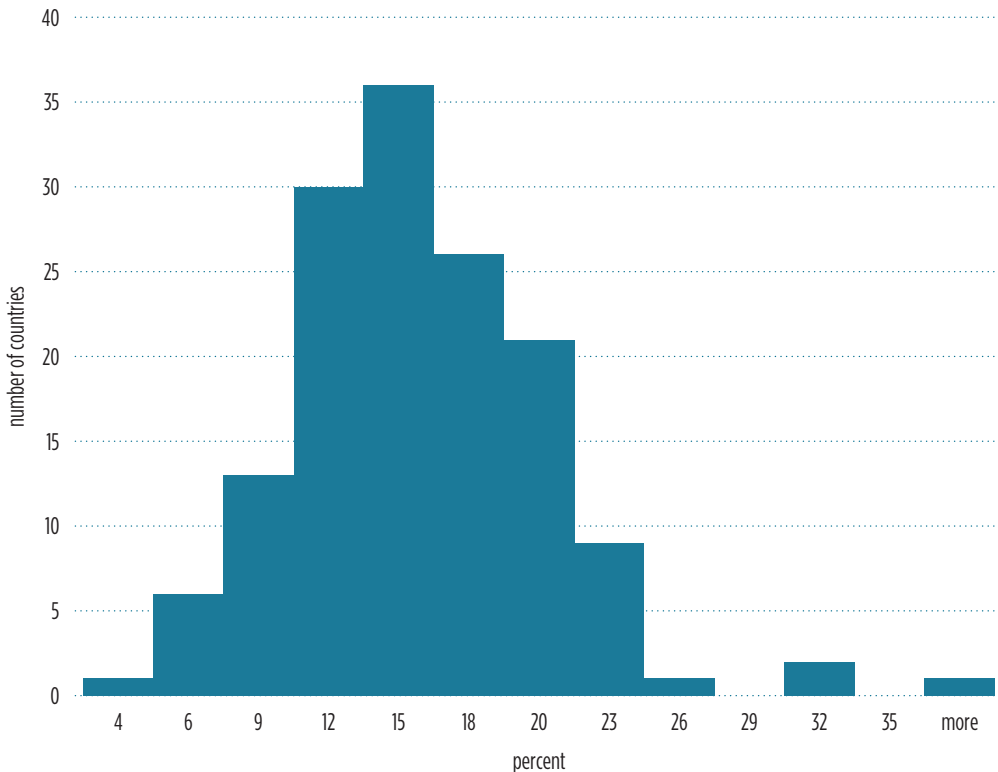
Table 17.4 lists the countries that participated in the 2005 ICP ranked by the percentage of GDP covered by reference PPPs. The percentages omit the two trade balances and the

TABLE 17.4 Percentage of GDP for Which Reference PPPs Were Used in ICP 2005

Country/Economy	% of GDP	Country/Economy	% of GDP	Country/Economy	% of GDP	Country/Economy	% of GDP
Paraguay	3.5	Yemen, Rep.	10.9	Sri Lanka	14.2	Czech Republic	17.5
Qatar	3.6	Bosnia and Herzegovina	11.0	Senegal	14.2	Slovak Republic	17.7
Venezuela, RB	4.6	Cameroon	11.2	Cyprus	14.2	Liberia	18.1
Ecuador	5.0	Thailand	11.3	Indonesia	14.2	China	18.1
Kuwait	5.4	Angola	11.4	Benin	14.3	Israel	18.2
Bolivia	5.9	Russian Federation	11.5	Poland	14.4	Mauritius	18.4
Syrian Arab Republic	6.1	Latvia	11.5	New Zealand	14.4	Vietnam	18.4
Mozambique	6.4	Romania	11.6	Hungary	14.5	United Kingdom	18.5
Mexico	6.8	Luxembourg	11.6	Jordan	14.5	Ethiopia	18.7
Tanzania	6.8	Ireland	11.8	Kazakhstan	14.5	Denmark	18.9
Turkey	6.9	Zimbabwe	11.8	France	14.6	Iran, Islamic Rep.	18.9
Saudi Arabia	7.1	Ukraine	11.8	Philippines	14.6	Nepal	19.0
Ghana	7.4	Estonia	11.9	Austria	14.9	Mongolia	19.2
Argentina	7.4	Bulgaria	12.2	Uganda	14.9	Lao PDR	19.2
Chile	7.4	Comoros	12.2	Brunei Darussalam	15.1	Namibia	19.4
Oman	7.7	Bahrain	12.3	Kenya	15.2	Djibouti	19.5
Nigeria	7.8	Mali	12.4	Germany	15.4	Australia	19.6
Congo, Rep.	7.8	Tunisia	12.5	Norway	15.6	Malawi	19.6
Uruguay	8.1	Iraq	12.5	Japan	15.7	Chad	19.7
Armenia	8.3	Canada	12.5	Rwanda	15.7	Hong Kong SAR, China	19.8
Lithuania	9.2	Azerbaijan	12.7	Sierra Leone	15.8	Malaysia	19.9
Peru	9.2	Slovenia	12.8	Singapore	15.8	Sweden	20.1
Sudan	9.2	Croatia	12.9	São Tomé and Príncipe	15.9	Niger	22.2
Equatorial Guinea	9.4	Egypt, Arab Rep.	12.9	Burundi	15.9	Burkina Faso	22.4
Lebanon	9.4	Bangladesh	12.9	Korea, Rep.	16.0	Gambia, The	22.5
Guinea	9.4	Montenegro	13.2	Brazil	16.0	United States	22.5
Botswana	9.5	Kyrgyz Republic	13.2	Lesotho	16.1	Netherlands	22.6
Belarus	9.6	Italy	13.5	Mauritania	16.1	Madagascar	22.6
Macao SAR, China	9.6	Pakistan	13.5	Finland	16.4	Taiwan, China	22.7
Macedonia, FYR	9.7	Gabon	13.5	Congo, Dem. Rep.	16.4	South Africa	23.0
Greece	9.8	Iceland	13.5	Togo	16.4	Guinea-Bissau	23.1
Albania	10.1	Portugal	13.6	Switzerland	16.5	Cape Verde	24.2
Central African Republic	10.2	Morocco	13.7	Belgium	16.8	Fiji	30.2
Serbia	10.2	Malta	13.8	Swaziland	16.9	Zambia	30.4
Georgia	10.6	Moldova	13.8	Bhutan	17.2	Maldives	37.4
Tajikistan	10.7	Cambodia	13.9	Spain	17.4		
Colombia	10.8	India	14.0	Côte d'Ivoire	17.4		

Source: ICP 2005.

FIGURE 17.1 Number of Countries by Share of Basic Headings
Estimated with Reference PPPs



Source: ICP 2005.

changes in inventories and valuables and correspond to those shown in the bottom line of table 17.3.

The countries in table 17.4 with lower percentages mostly reported low government expenditures, while those with the higher percentages usually had much higher government expenditures (both collective and individual) and, in the African and Asian countries, large shares of actual and imputed rentals for housing. Figure 17.1 shows that the country percentages are fairly evenly distributed around the global mean of 14 percent.

How Did the Use of Reference PPPs Affect the Results of the Comparison?

The figures and tables in this section compare the 2005 published PPP for GDP with what the PPP for GDP would have been had it been calculated, first, without using price-based reference PPPs and, second, without using exchange rate reference PPPs.

Table 17.5 shows the percentage differences between GDP PPPs calculated without price-based reference PPPs. A negative figure means that the use of price-based reference PPPs reduced

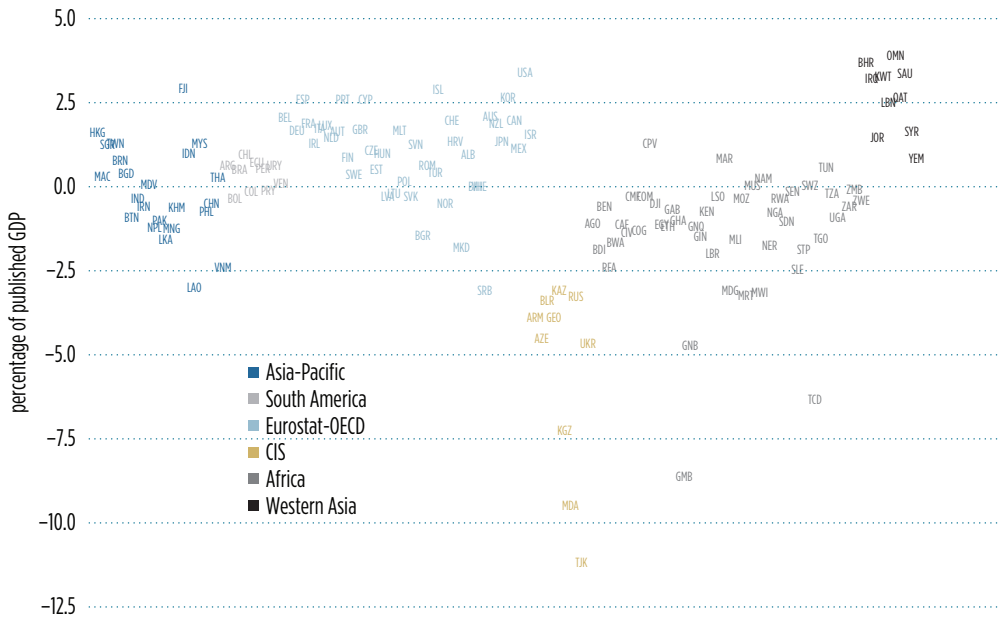
TABLE 17.5 Differences between GDP PPP without Price-Based Reference PPPs and Published GDP PPP*percentage of published GDP PPP*

Country/Economy	%	Country/Economy	%	Country/Economy	%	Country/Economy	%
Bosnia and Herzegovina	-0.0	Iran, Islamic Rep.	-0.6	Slovenia	1.3	Belgium	2.0
Swaziland	0.0	South Africa	0.6	Taiwan, China	1.3	Australia	2.1
Montenegro	-0.0	Argentina	0.6	Cape Verde	1.3	Burkina Faso	-2.4
Mauritius	0.0	Benin	-0.6	Ireland	1.3	Vietnam	-2.4
Maldives	0.1	Congo, Dem. Rep.	-0.6	Malaysia	1.3	Sierra Leone	-2.5
Venezuela, RB	0.1	Uruguay	0.6	Singapore	1.3	Lebanon	2.5
Zambia	-0.1	Denmark	0.6	Congo, Rep.	-1.3	Cyprus	2.6
Paraguay	-0.1	Romania	0.6	Japan	1.3	Portugal	2.6
Poland	0.1	Cambodia	-0.6	Croatia	1.3	Spain	2.6
Colombia	-0.2	Gabon	-0.7	Côte d'Ivoire	-1.4	Qatar	2.6
Senegal	-0.2	Ecuador	0.7	Jordan	1.5	Korea, Rep.	2.6
Namibia	0.2	Philippines	-0.8	Bulgaria	-1.5	Iceland	2.9
Tanzania	-0.2	Kenya	-0.8	Netherlands	1.5	Fiji	2.9
Lithuania	-0.2	Brunei Darussalam	0.8	Guinea	-1.5	Lao PDR	-3.0
Thailand	0.2	Nigeria	-0.8	Israel	1.5	Kazakhstan	-3.1
Latvia	-0.3	Yemen, Rep.	0.8	Hong Kong SAR, China	1.5	Serbia	-3.1
Slovak Republic	-0.3	Morocco	0.8	Togo	-1.6	Madagascar	-3.1
Cameroon	-0.3	Finland	0.9	Sri Lanka	-1.6	Malawi	-3.2
Macao SAR, China	0.3	Uganda	-0.9	Mali	-1.6	Iraq	3.2
Comoros	-0.3	Albania	0.9	Austria	1.6	Mauritania	-3.2
Lesotho	-0.3	Chile	0.9	Syrian Arab Republic	1.6	Kuwait	3.3
Sweden	0.3	Bhutan	-0.9	Botswana	-1.7	Russian Federation	-3.3
Rwanda	-0.3	Indonesia	1.0	Malta	1.7	Saudi Arabia	3.4
Mozambique	-0.4	Hungary	1.0	Germany	1.7	United States	3.4
Bolivia	-0.4	Ghana	-1.0	United Kingdom	1.7	Belarus	-3.4
India	-0.4	Pakistan	-1.0	Italy	1.7	Bahrain	3.7
Bangladesh	0.4	Sudan	-1.0	Niger	-1.8	Oman	3.9
Turkey	0.4	Czech Republic	1.1	Luxembourg	1.8	Armenia	-3.9
Zimbabwe	-0.4	Angola	-1.1	Macedonia, FYR	-1.8	Georgia	-3.9
China	-0.5	Central African Republic	-1.1	France	1.9	Azerbaijan	-4.5
Norway	-0.5	Egypt, Arab Rep.	-1.2	New Zealand	1.9	Ukraine	-4.7
Estonia	0.5	Mexico	1.2	São Tomé and Príncipe	-1.9	Guinea-Bissau	-4.7
Peru	0.5	Ethiopia	-1.2	Burundi	-1.9	Chad	-6.3
Djibouti	-0.5	Equatorial Guinea	-1.2	Switzerland	2.0	Kyrgyz Republic	-7.2
Brazil	0.5	Nepal	-1.2	Canada	2.0	Gambia, The	-8.6
Tunisia	0.6	Mongolia	-1.3	Liberia	-2.0	Moldova	-9.5
						Tajikistan	-11.2

Source: ICP 2005.

Note: Countries/economies are ranked in ascending order of the absolute value of the difference.

FIGURE 17.2 Effect of Price-Based Reference PPPs: Difference between Published PPP for GDP and PPP for GDP without Price-Based Reference Basic Headings, by Country within ICP Region



Source: ICP 2005.
 Note: See annex B for country/economy codes.

the GDP PPP actually published compared with what the GDP PPP would have been had no reference PPPs been used. Most of the differences are positive, indicating that the use of price-based reference PPPs had an upward impact on the calculation of PPPs for GDP.

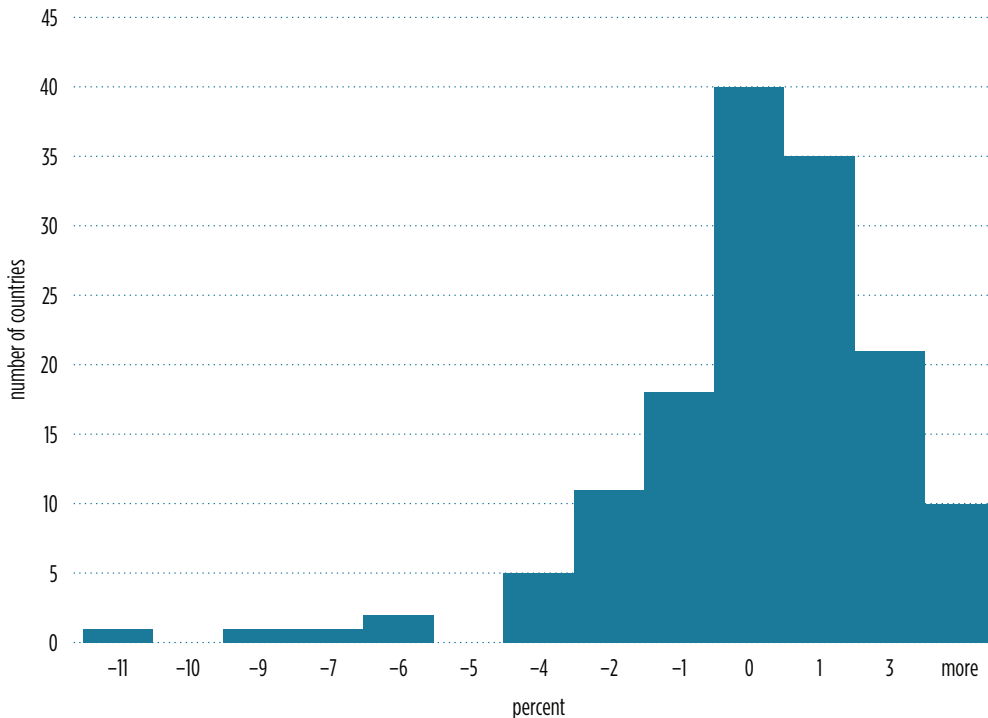
Figure 17.2 shows the distribution of the 146 participating countries, ordered by region. In four regions—Asia-Pacific, South America, Eurostat-OECD, and Africa—the differences are mostly quite small; the differences for countries in the CIS and Western Asia groups are somewhat larger.

The histogram in figure 17.3 shows that the differences are less than ± 1.5 percent for 60 percent of the countries and less than 2.5 percent for three-quarters of them. Several countries from the CIS and Africa regions, however, display significant negative differences of more than 6 percent. Many of the price-based reference PPPs were selected because they would have a neutral effect on the calculation of the overall PPPs, so this result is not unexpected. Even though reference PPPs were used for quite high shares of GDP in many countries, the reference PPPs selected did not much influence the overall results. The Western Asia region preferred specific to neutral reference PPPs, which may explain why the differences are somewhat larger for countries in this region.

Table 17.6 and figures 17.4 and 17.5 show the effects of using exchange-rate based PPPs. The differences are substantially larger than for price-based reference PPPs—they go from nearly -7 percent for Iceland to over +11 percent for Moldova and The Gambia.

In interpreting these differences, it is important to remember that they depend on both the size of the balances (of trade and direct purchases abroad) and on the extent to which exchange rates differ from PPPs. If the total balance of the two items is zero or small, the differences shown in

FIGURE 17.3 Number of Countries by Size of Differences between GDP PPP without Price-Based Reference PPPs and Published GDP PPP



Source: ICP 2005.

table 17.6 will also be zero or small. If the total balance is larger, the difference shown in table 17.6 will depend on how far the exchange rate diverges from the GDP PPP.

Lessons for ICP 2011

The decision about when to use reference PPPs rather than collect prices for a basic heading must be made by the countries in each region in consultation with the regional coordinators. That decision will depend on the resources available for price collection and on the importance of the basic headings. The choice of reference PPPs is similarly a matter for consultation between the countries and their regional coordinators. The Global Office can nevertheless offer some guidance based on the experience in previous rounds of the ICP. Seven suggestions emerge from the discussion in this chapter:

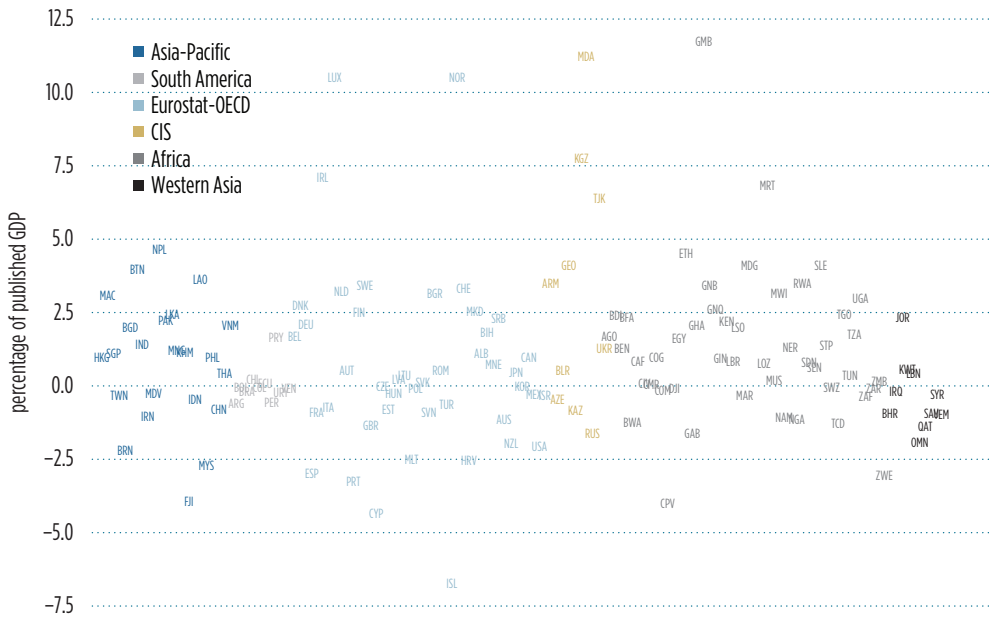
1. Four basic headings for which reference PPPs were used were identified as particularly important in terms of their GDP shares. These are maintenance and repair of the dwelling; social protection (under household consumption); insurance;⁵ and other products (under gross fixed capital formation). It should be possible to find prices for representative items in at least some of these basic headings for the 2011 ICP so that their PPPs are measured directly from actual prices.

TABLE 17.6 Difference between GDP PPP without Exchange Rate-Based Reference PPPs and Published GDP PPP*percentage of published GDP PPP*

Country/ Economy	%	Country/ Economy	%	Country/ Economy	%	Country/ Economy	%
Ecuador	0.0	Azerbaijan	-0.5	Ukraine	1.2	Malta	-2.5
Cameroon	0.0	Indonesia	-0.5	Benin	1.2	Croatia	-2.6
Korea, Rep.	-0.1	Belarus	0.5	Botswana	-1.3	Equatorial Guinea	2.6
Czech Republic	-0.1	Kuwait	0.5	Niger	1.3	Denmark	2.7
Poland	-0.1	Senegal	0.6	Chad	-1.3	Malaysia	-2.7
Côte d'Ivoire	0.1	Peru	-0.6	São Tomé and Príncipe	1.3	Uganda	2.9
Colombia	-0.1	Argentina	-0.6	India	1.4	Spain	-3.0
Zambia	0.1	Turkey	-0.7	United Kingdom	-1.4	Macao SAR, China	3.0
Slovak Republic	0.1	Montenegro	0.7	Qatar	-1.4	Zimbabwe	-3.1
Swaziland	-0.1	Mali	0.7	Egypt, Arab Rep.	1.6	Malawi	3.1
Djibouti	-0.1	Mozambique	0.7	Paraguay	1.6	Bulgaria	3.1
Bolivia	-0.1	Italy	-0.8	Belgium	1.7	Netherlands	3.2
Venezuela, RB	-0.1	Sudan	0.8	Russian Federation	-1.7	Portugal	-3.3
Mauritius	0.1	Liberia	0.8	Angola	1.7	Switzerland	3.3
Congo, Dem. Rep.	-0.1	Central Africa Republic	0.8	Gabon	-1.7	Guinea-Bissau	3.4
Chile	0.2	Estonia	-0.8	Tanzania	1.7	Sweden	3.4
Comoros	-0.2	China	-0.8	Bosnia Herzegovina	1.8	Rwanda	3.5
Latvia	0.2	Kazakhstan	-0.9	Bangladesh	2.0	Armenia	3.5
Iraq	-0.2	Congo, Rep.	0.9	Oman	-2.0	Lao PDR	3.6
Brazil	-0.2	Canada	0.9	New Zealand	-2.0	Bhutan	3.9
Uruguay	-0.2	Guinea	0.9	Lesotho	2.0	Fiji	-4.0
Hungary	-0.3	Slovenia	-0.9	Vietnam	2.0	Cape Verde	-4.0
Maldives	-0.3	Hong Kong SAR, China	0.9	Germany	2.1	Madagascar	4.1
Lithuania	0.3	Philippines	0.9	Ghana	2.1	Georgia	4.1
Mexico	-0.3	France	-1.0	United States	-2.1	Sierra Leone	4.1
Israel	-0.3	Bahrain	-1.0	Kenya	2.2	Cyprus	-4.4
Tunisia	0.3	Saudi Arabia	-1.0	Brunei Darussalam	-2.2	Ethiopia	4.5
Syrian Arab Republic	-0.3	Yemen, Rep.	-1.0	Pakistan	2.2	Nepal	4.6
Taiwan, China	-0.4	Albania	1.0	Serbia	2.3	Tajikistan	6.3
Thailand	0.4	Singapore	1.1	Jordan	2.3	Iceland	-6.7
South Africa	-0.4	Iran, Islamic Rep.	-1.1	Burkina Faso	2.3	Mauritania	6.8
Morocco	-0.4	Namibia	-1.1	Burundi	2.3	Ireland	7.1
Lebanon	0.4	Cambodia	1.1	Sri Lanka	2.4	Kyrgyz Republic	7.7
Japan	0.4	Australia	-1.2	Togo	2.4	Norway	10.4
Austria	0.5	Mongolia	1.2	Finland	2.5	Luxembourg	10.5
Romania	0.5	Nigeria	-1.2	Macedonia, FYR	2.5	Moldova	11.2
						Gambia, The	11.7

Source: ICP 2005.

FIGURE 17.4 Effect of Exchange Rate Reference PPPs: Difference between Published PPP for GDP and PPP for GDP without Exchange Rate Reference PPPs, by Country within ICP Region

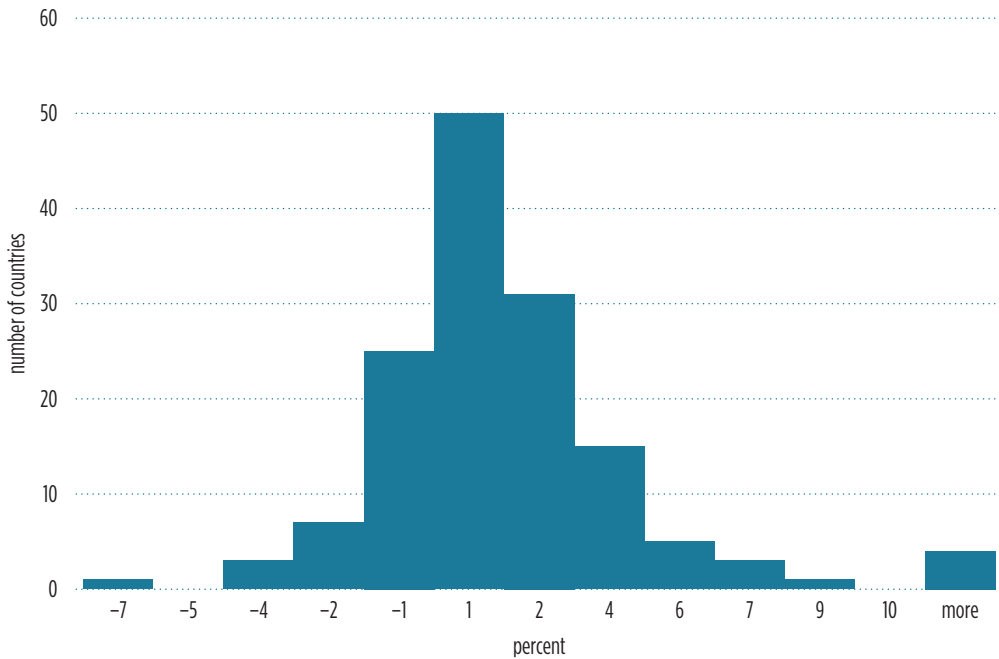


Source: ICP 2005.

Note: See annex B for country/economy codes.

2. Some regions should consider collecting prices for goods and services that have significant weights in their own regions. Motorcycles in Asia-Pacific, domestic services in Africa, and nongovernmental education in the Eurostat-OECD and CIS regions are some examples.
3. As a general rule, it is probably best to not mix goods and services. If a reference PPP is to be used for a goods basic heading, the reference PPP should also be based on a goods basic heading. And, of course, the same applies to services. The reason for this rule is that we know from past rounds that the relative prices of goods and services are usually very different between countries. In the 2005 round, the PPPs for major household appliances, small electric household appliances, and small tools and miscellaneous accessories were used as reference PPPs for domestic services in both the Asia-Pacific and Africa regions. It probably would have been better to use service basic headings as the reference.
4. The weighted geometric averages of PPPs for tourist-type expenditures—on hotels, restaurants, and transport, for example—would probably be better reference PPPs for net resident expenditures abroad than exchange rates.
5. Where feasible, specific reference PPPs are to be preferred to neutral ones. In the 2005 ICP round, the Western Asia region used averages of the PPPs for gardens and pets, medical services, and paramedical services as a reference PPP for veterinary and pet services and PPPs for recreational and sporting services as reference PPPs for games of chance. Other regions used neutral reference PPPs in both cases.

FIGURE 17.5 Number of Countries by Size of Differences between GDP PPP without Exchange Rate PPPs and Published GDP PPP



Source: ICP 2005.

6. The use of reference PPPs for actual and imputed rentals for housing should be avoided in the 2011 round. The Asia-Pacific and Africa regions may need more help in providing rental data and data on the quantity and quality of dwellings, so that one or other of the preferred methods can be used to calculate PPPs for this important basic heading. The use of the volume-based reference PPP in the 2005 round undoubtedly affected the reliability of the PPPs for these regions, although the size and direction of the errors cannot be known.
7. Finally, it would be useful to review the reference PPPs at the data validation stage. In the 2005 ICP round, great care was taken with the price validation, but the reference PPPs were not evaluated with the same care.

ANNEX A

Reference PPP Basic Headings (BHs)

BH: Spirits	BH code: 110211.1
Western Asia	Nonalcoholic beverages (Kuwait, Qatar, Saudi Arabia, Yemen, Rep.)
BH: Wine	BH code: 110212.1
Western Asia	Nonalcoholic beverages (Kuwait, Qatar, Saudi Arabia, Yemen, Rep.)
BH: Beer	BH code: 110213.1
Western Asia	Nonalcoholic beverages (Kuwait, Qatar, Saudi Arabia, Yemen, Rep.)
BH: Narcotics	BH code: 110231.1
Eurostat-OECD	Individual consumption expenditure by households, excluding health BHs, education BHs, reference PPP BHs
BH: Water supply	BH code: 110441.1
Western Asia	Individual consumption expenditure by households, excluding reference PPP BHs
BH: Miscellaneous dwelling services	BH code: 110442.1
Eurostat-OECD	Actual and imputed rents
Asia-Pacific	Maintenance of the dwelling; water supply
Africa	Maintenance of the dwelling; water supply
Western Asia	Individual consumption expenditure by households, excluding reference PPP BHs
South America	Maintenance of the dwelling; water supply
BH: Repair of furniture	BH code: 110513.1
Asia-Pacific	Maintenance of the dwelling
Africa	Maintenance of the dwelling
Western Asia	Geometric mean of PPPs for cleaning; repair and hire of clothing; repair and hire of footwear; maintenance and repair of the dwelling
South America	Maintenance of the dwelling
BH: Repair of household appliances	BH code: 110533.1
Asia-Pacific	Maintenance of the dwelling
Africa	Maintenance of the dwelling
Western Asia	Geometric mean of PPPs for cleaning; repair and hire of clothing; repair and hire of footwear; maintenance and repair of the dwelling
South America	Maintenance of the dwelling
BH: Domestic services	BH code: 110562.1
Asia-Pacific	Major household appliances; small electric household appliances; small tools and misc. accessories
Africa	Major household appliances; small electric household appliances; small tools and misc. accessories
BH: Household services	BH code: 110562.2
Asia-Pacific	Maintenance of the dwelling

(continued)

Africa	Maintenance of the dwelling
Western Asia	Domestic services
South America	Maintenance of the dwelling
BH: Hospital services	BH code: 110631.1
Eurostat-OECD	Production of health services by government without net taxes on production and receipts from sales
BH: Motorcycles	BH code: 110712.1
Asia-Pacific	Motor cars
Africa	Motor cars
Western Asia	Motor cars
South America	Motor cars
BH: Animal-drawn vehicles	BH code: 110714.1
Eurostat-OECD	Individual consumption expenditure by households, excluding health BHs, education BHs, reference PPP BHs
Western Asia	Bicycles
BH: Passenger transport by railway	BH code: 110731.1
Western Asia	Passenger transport by road
BH: Passenger transport by sea	BH code: 110734.1
Asia-Pacific	Transport BHs, excluding motor cars; bicycles, reference PPP BHs
Africa	Transport BHs, excluding motor cars; bicycles, reference PPP BHs
Western Asia	Geometric mean of PPPs for passenger transport by road and passenger transport by air
South America	Transport BHs, excluding motor cars, bicycles, reference PPP BHs
BH: Combined passenger transport	BH code: 110735.1
Asia-Pacific	Transport BHs, excluding motor cars, bicycles, reference PPP BHs
Africa	Transport BHs, excluding motor cars, bicycles, reference PPP BHs
Western Asia	Passenger transport by road
South America	Transport BHs, excluding motor cars, bicycles, reference PPP BHs
BH: Other transport services	BH code: 110736.1
Asia-Pacific	Transport BHs, excluding, motor cars, bicycles, reference PPP BHs
Africa	Transport BHs, excluding motor cars, bicycles, reference PPP BHs
South America	Transport BHs, excluding motor cars, bicycles, reference PPP BHs
BH: Major durables for recreation	BH code: 110921.1
Asia-Pacific	Bicycles; audiovisual, photographic, and computer equipment
Africa	Bicycles; audiovisual, photographic, and computer equipment
South America	Bicycles; audiovisual, photographic, and computer equipment
BH: Maintenance of other major durables	BH code: 110923.1
Western Asia	Repair of audiovisual, photographic, and information processing equipment
BH: Garden and pets	BH code: 110933.1
Asia-Pacific	Individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, hospital services, reference PPP BHs

Africa	Individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, reference PPP BHs
South America	Individual consumption expenditure by households, excluding domestic services, reference PPP BHs
BH: Veterinary and pet services	BH code: 110935.1
Asia-Pacific	Individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, hospital services, reference PPP BHs
Africa	Individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, reference PPP BHs
Western Asia	Geometric mean of the PPPs for gardens and pets; medical services; paramedical services
South America	Individual consumption expenditure by households, excluding domestic services, reference PPP BHs
BH: Games of chance	BH code: 110943.1
Eurostat-OECD	Individual consumption expenditure by households, excluding health BHs, education BHs, reference PPP BHs
Asia-Pacific	Individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, hospital services, reference PPP BHs
Africa	Individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, reference PPP BHs
Western Asia	Recreational and sporting services
South America	Individual consumption expenditure by households, excluding domestic services, reference PPP BHs
BH: Package holidays	BH code: 110961.1
Eurostat-OECD	Weighted average of PPPs for transport services; restaurants and hotels
BH: Education	BH code: 111011.1
Eurostat-OECD	Production of education services by government without net taxes on production and receipts from sales
BH: Prostitution	BH code: 111221.1
Eurostat-OECD	Individual consumption expenditure by households, excluding health BHs, education BHs, reference PPP BHs
BH: Social protection	BH code: 111241.1
Eurostat-OECD	Government final consumption expenditure, excluding social protection, recreation and culture, housing
Asia-Pacific	Individual consumption expenditure by households, excluding health, education, net final consumption expenditure of resident households in the rest of the world, major tools and equipment, hospital services, reference PPP BHs
Africa	Compensation of employees; machinery and equipment BHs; construction BHs; individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, reference PPP BHs
Western Asia	Individual consumption expenditure by households
South America	Compensation of employees; machinery and equipment BHs; construction BHs; individual consumption expenditure by households, excluding domestic services, reference PPP BHs

(continued)

BH: Insurance	BH code: 111251.1
Eurostat-OECD	Individual consumption expenditure by households, excluding health BHs, education BHs, reference PPP BHs
Asia-Pacific	Individual consumption expenditure by households, excluding health, education, net final consumption expenditure of resident households in the rest of the world, major tools and equipment, hospital services, reference PPP BHs
Africa	Individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, reference PPP BHs
Western Asia	Individual consumption expenditure by households, excluding reference PPP BHs
South America	Individual consumption expenditure by households, excluding domestic services, reference PPP BHs
BH: FISIM	BH code: 111261.1
Eurostat-OECD	Individual consumption expenditure by households, excluding health BHs, education BHs, reference PPP BHs
Asia-Pacific	Individual consumption expenditure by households, excluding health, education, net final consumption expenditure of resident households in the rest of the world, major tools and equipment, hospital services, reference PPP BHs
Africa	Individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, reference PPP BHs
Western Asia	Individual consumption expenditure by households, excluding reference PPP BHs
South America	Individual consumption expenditure by households, excluding domestic services, reference PPP BHs
BH: Other financial services	BH code: 111262.1
Asia-Pacific	Individual consumption expenditure by households, excluding health, education, net final consumption expenditure of resident households in the rest of the world, major tools and equipment, hospital services, reference PPP BHs
Africa	Individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, reference PPP BHs
Western Asia	Individual consumption expenditure by households, excluding reference PPP BHs
South America	Individual consumption expenditure by households, excluding domestic services, reference PPP BHs
BH: Other services	BH code: 111271.1
Asia-Pacific	Individual consumption expenditure by households, excluding health, education, net final consumption expenditure of resident households in the rest of the world, major tools and equipment, hospital services, reference PPP BHs
Africa	Individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, reference PPP BHs
Western Asia	Individual consumption expenditure by households, excluding reference PPP BHs
South America	Individual consumption expenditure by households, excluding domestic services, reference PPP BHs
BH: Purchases by residents in the rest of the world	BH code: 111311.1
Eurostat-OECD	Exchange rates
West Asia	Exchange rates

BH: Purchases by nonresidents in the country	BH code: 111311.2
Eurostat-OECD	Exchange rates
BH: NPISH consumption	BH code: 120111.1
Eurostat-OECD	Government final consumption expenditure, excluding social protection, recreation and culture, housing
BH: Housing	BH code: 130111.1
Eurostat-OECD	Actual and imputed rents
BH: Hospital services	BH code: 130212.4
Eurostat-OECD	Production of health services by government without net taxes on production and receipts from sales
BH: Intermediate consumption	BH code: 130222.1
Eurostat-OECD	Individual consumption expenditure by households, excluding health BHs, education BHs, reference PPP BHs
Asia-Pacific	Individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, hospital services, reference PPP BHs
Africa	Individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, reference PPP BHs
Western Asia	Individual consumption expenditure by households, excluding reference PPP BHs
South America	Individual consumption expenditure by households, excluding domestic services, reference PPP BHs
BH: Gross operating surplus	BH code: 130223.1
Eurostat-OECD	Gross fixed capital formation
Asia-Pacific	Machinery and equipment BHs; construction BHs
Africa	Machinery and equipment BHs; construction BHs
Western Asia	Gross fixed capital formation, excluding reference PPP BHs
South America	Machinery and equipment BHs; construction BHs
BH: Net taxes on production	BH code: 130224.1
Eurostat-OECD	Production of health services by government without net taxes on production and receipts from sales
Asia-Pacific	Compensation of employees; machinery and equipment BHs; construction BHs; individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, hospital services, reference PPP BH
Africa	Compensation of employees; machinery and equipment BHs; construction BHs; individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, and reference PPP BHs
Western Asia	Production of health services, excluding reference PPP BHs
South America	Compensation of employees; machinery and equipment BHs; construction BHs; individual consumption expenditure by households, excluding domestic services, reference PPP BHs
BH: Receipts from sales	BH code: 130225.1
Eurostat-OECD	Production of health services by government without net taxes on production and receipts from sales

(continued)

Asia-Pacific	Compensation of employees; machinery and equipment BHs; construction BHs; individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, hospital services, reference PPP BHs
Africa	Compensation of employees; machinery and equipment BHs; construction BHs; individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, reference PPP BHs
Western Asia	Production of health services, excluding reference PPP BHs
South America	Compensation of employees; machinery and equipment BHs; construction BHs; individual consumption expenditure by households, excluding domestic services, reference PPP BHs
BH: Recreation and culture	BH code: 130311.1
Eurostat-OECD	Government final consumption expenditure, excluding social protection, recreation and culture, housing
Asia-Pacific	Recreational and sporting services; cultural services
BH: Education benefits and reimbursements	BH code: 130411.1
Eurostat-OECD	Production of education services by government without net taxes on production and receipts from sales
BH: Intermediate consumption	BH code: 130422.1
Eurostat-OECD	Individual consumption expenditure by households, excluding health BHs, education BHs, reference PPP BHs
Asia-Pacific	Individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, hospital services, reference PPP BHs
Africa	Individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, reference PPP BHs.
Western Asia	Individual consumption expenditure by households, excluding reference PPP BHs
South America	Individual consumption expenditure by households, excluding domestic services, reference PPP BHs
BH: Gross operating surplus	BH code: 130423.1
Eurostat-OECD	Gross fixed capital formation
Asia-Pacific	Machinery and equipment BHs; construction BHs
Africa	Machinery and equipment BHs; construction BHs
Western Asia	Gross fixed capital formation, excluding reference PPPs BHs
South America	Machinery and equipment BHs; construction BHs
BH: Net taxes on production	BH code: 130424.1
Eurostat-OECD	Production of education services by government without net taxes on production and receipts from sales
Asia-Pacific	Compensation of employees; machinery and equipment BHs; construction BHs; individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, hospital services, reference PPP BHs
Africa	Compensation of employees; machinery and equipment BHs; construction BHs; individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, reference PPP BHs
Western Asia	Production of education services, excluding reference PPP BHs
South America	Compensation of employees; machinery and equipment BHs; construction BHs; individual consumption expenditure by households, excluding domestic services, reference PPP BHs

BH: Receipt from sales	BH code: 130425.1
Eurostat-OECD	Production of education services by government without net taxes on production and receipts from sales
Asia-Pacific	Compensation of employees; machinery and equipment BHs; construction BHs; individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, hospital services, reference PPP BHs
Africa	Compensation of employees; machinery and equipment BHs; construction BHs; individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, reference PPP BHs
Western Asia	Production of education services, excluding reference PPP BHs
South America	Compensation of employees; machinery and equipment BHs; construction BHs; individual consumption expenditure by households, excluding domestic services, reference PPP BHs
BH: Social protection	BH code: 130511.1
Eurostat-OECD	Government final consumption expenditure, excluding social protection, recreation and culture, housing
BH: Intermediate consumption	BH code: 140112.1
Eurostat-OECD	Individual consumption expenditure by households, excluding health BHs, education BHs, reference PPP BHs
Asia-Pacific	Machinery and equipment BHs; construction BHs; individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, hospital services, reference PPP BHs
Africa	Machinery and equipment BHs; construction BHs; individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, reference PPP BHs
Western Asia	Individual consumption expenditure by households, excluding reference PPP BHs
South America	Machinery and equipment BHs; construction BHs; individual consumption expenditure by households, excluding domestic services, reference PPP BHs
BH: Gross operating surplus	BH code: 140113.1
Eurostat-OECD	Gross fixed capital formation
Asia-Pacific	Machinery and equipment BHs; construction BHs
Africa	Machinery and equipment BHs; construction BHs
Western Asia	Gross fixed capital formation, excluding reference PPPs BHs
South America	Machinery and equipment BHs; construction BHs
BH: Net taxes on production	BH code: 140114.1
Eurostat-OECD	Production of collective services by government without net taxes on production and receipts from sales
Asia-Pacific	Compensation of employees; machinery and equipment BHs; construction BHs; individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, hospital services, reference PPP BHs
Africa	Compensation of employees; machinery and equipment BHs; construction BHs; individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, reference PPP BHs
Western Asia	Collective services, excluding reference PPP BHs
South America	Compensation of employees; machinery and equipment BHs; construction BHs; individual consumption expenditure by households, excluding domestic services, reference PPP BHs

(continued)

BH: Receipts from sales	BH code: 140115.1
Eurostat-OECD	Production of collective services by government without net taxes on production and receipts from sales
Asia/Pacific	Compensation of employees; machinery and equipment BHs; construction BHs; individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, hospital services, reference PPP BHs
Africa	Compensation of employees; machinery and equipment BHs; construction BHs; individual consumption expenditure by households, excluding net final consumption expenditure of resident households in the rest of the world, major tools and equipment, reference PPP BHs
West Asia	Collective services, excluding reference PPP BHs
South America	Compensation of employees; machinery and equipment BHs; construction BHs; individual consumption expenditure by households, excluding domestic services, reference PPP BHs
BH: Fabricated metal products	BH code: 150111.1
Western Asia	Metal products and equipment, excluding reference PPP BHs
BH: Other manufactured goods	BH code: 150115.1
Western Asia	Metal products and equipment, excluding reference PPP BHs
BH: Other road transport	BH code: 150121.2
Western Asia	Motor vehicles, trailers, and semitrailers
BH: Other transport equipment	BH code: 150122.1
Eurostat-OECD	Gross fixed capital formation
Western Asia	Motor vehicles, trailers, and semitrailers
BH: Other products	BH code: 150311.1
Eurostat-OECD	Gross fixed capital formation
Asia-Pacific	Machinery and equipment BHs; construction BHs
Africa	Machinery and equipment BHs; construction BHs
South America	Machinery and equipment BHs; construction BHs
BH: Opening value of inventories	BH code: 1601111
Eurostat-OECD	Weighted average of PPPs for consumer goods and equipment goods
Western Asia	Geometric mean of PPPs for durable goods BHs
BH: Closing value of inventories	BH code: 160111.2
Eurostat-OECD	Weighted average of PPPs for consumer goods and equipment goods
BH: Acquisitions of valuables	BH code: 160211.1
Eurostat-OECD	Jewelry, clocks, and watches
BH: Disposals of valuables	BH code: 160211.2
Eurostat-OECD	Jewelry, clocks, and watches
BH: Exports of goods and services	BH code: 170111.1
Eurostat-OECD	Exchange rates
West Asia	Exchange rates
BH: Imports of goods and services	BH code: 170111.2
Eurostat-OECD	Exchange rates

Source: ICP.

ANNEX B

Country/Economy Codes

Country	Code	Country	Code	Country	Code
Albania	ALB	Denmark	DNK	Lao PDR	LAO
Angola	AGO	Djibouti	DJI	Latvia	LVA
Argentina	ARG	Ecuador	ECU	Lebanon	LBN
Armenia	ARM	Egypt, Arab Rep.	EGY	Lesotho	LSO
Australia	AUS	Equatorial Guinea	GNQ	Liberia	LBR
Austria	AUT	Estonia	EST	Lithuania	LTU
Azerbaijan	AZE	Ethiopia	ETH	Luxembourg	LUX
Bahrain	BHR	Fiji	FJI	Macao SAR, China	MAC
Bangladesh	BGD	Finland	FIN	Macedonia, FYR	MKD
Belgium	BEL	France	FRA	Madagascar	MDG
Benin	BEN	Gabon	GAB	Malawi	MWI
Bhutan	BTN	Gambia, The	GMB	Malaysia	MYS
Bolivia	BOL	Georgia	GEO	Maldives	MDV
Bosnia and Herzegovina	BIH	Germany	DEU	Mali	MLI
Botswana	BWA	Ghana	GHA	Malta	MLT
Brazil	BRA	Greece	GRC	Mauritania	MRT
Brunei Darussalam	BRN	Guinea	GIN	Mauritius	MUS
Bulgaria	BGR	Guinea-Bissau	GNB	Mexico	MEX
Burkina Faso	BFA	Hong Kong SAR, China	HKG	Moldova	MDA
Burundi	BDI	Hungary	HUN	Mongolia	MNG
Cambodia	KHM	Iceland	ISL	Montenegro	MNE
Cameroon	CMR	India	IND	Morocco	MAR
Canada	CAN	Indonesia	IDN	Mozambique	MOZ
Cape Verde	CPV	Iran, Islamic Rep.	IRN	Namibia	NAM
Central African Republic	CAF	Iraq	IRQ	Nepal	NPL
Chad	TCO	Ireland	IRL	Netherlands	NLD
Chile	CHL	Israel	ISR	New Zealand	NZL
China	CHN	Italy	ITA	Niger	NER
Colombia	COL	Japan	JPN	Nigeria	NGA
Comoros	COM	Jordan	JOR	Norway	NOR
Congo, Dem. Rep.	COG	Kazakhstan	KAZ	Oman	OMN
Côte d'Ivoire	CIV	Kenya	KEN	Pakistan	PAK
Croatia	HRV	Korea, Rep.	KOR	Paraguay	PRY
Cyprus	CYP	Kuwait	KWT	Peru	PER
Czech Republic	CZE	Kyrgyz Republic	KGZ	Philippines	PHL

(continued)

Country	Code	Country	Code	Country	Code
Poland	POL	Slovenia	SVN	Togo	TGO
Portugal	PRT	South Africa	ZAF	Tunisia	TUN
Qatar	QAT	Spain	ESP	Turkey	TUR
Romania	ROM	Sri Lanka	LKA	Uganda	UGA
Russian Federation	RUS	Sudan	SDN	Ukraine	UKR
Rwanda	RWA	Swaziland	SWZ	United Kingdom	GBR
São Tomé and Príncipe	STP	Sweden	SWE	United States	USA
Saudi Arabia	SAU	Switzerland	CHE	Uruguay	URY
Senegal	SEN	Syrian Arab Republic	SYR	Venezuela, RB	VEN
Serbia	SRB	Taiwan, China	TWN	Vietnam	VNM
Sierra Leone	SLE	Tajikistan	TJK	Yemen, Rep.	YEM
Singapore	SGP	Tanzania	TZA	Zambia	ZMB
Slovak Republic	SVK	Thailand	THA	Zimbabwe	ZWE

NOTES

1. The qualifier *reference* raises the question “Referring to what?” Terms such as *surrogate PPPs* or *proxy PPPs* might be easier to understand. However, the term *reference PPPs* is firmly embedded in the literature on international comparisons and so is used throughout this chapter.
2. The five geographic ICP regions in 2005 were Africa, Asia-Pacific, Commonwealth of Independent States (CIS), South America, and Western Asia. The Eurostat–Organisation for Economic Co-operation and Development (OECD) members constituted a sixth region.
3. A calculation was made based on earlier comparisons, in which for large groups of countries the dwelling services in real terms were found to be approximately proportionate to the overall real HFCE. That supported the reference volume neutrality argument.
4. In practice, all regions except the Eurostat–Organisation for Economic Co-operation and Development (OECD) collapsed these pairs of basic headings to single “balance” basic headings: exports minus imports and purchases abroad by residents minus purchases in the domestic territory by nonresidents. Note that the basic headings final consumption expenditure of resident households in the rest of the world and final consumption expenditure of nonresident households in the economic territory are adjustment items that are not usually required if estimates of household consumption expenditure are based on a household expenditure survey. This is, in practice, how many countries outside the Eurostat-OECD and CIS groups estimate the household consumption expenditure, and these countries did not therefore need to estimate these basic headings.
5. The basic heading insurance covers only the service charge and not the whole of the insurance premium. The insurance service charge cannot be measured directly, but it is reasonable to assume that PPPs for service charges will be close to PPPs calculated from premiums.

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