

CHAPTER 6: CAPITAL GOODS AND SERVICES

Introduction

- 6.1. Gross capital formation is defined in the SNA 93¹ and the ESA 95² as the sum of gross fixed capital formation (GFCF), change in inventories and acquisitions less disposals of valuables. For the purposes of Eurostat and OECD comparisons, prices are collected only for GFCF. As prices are not collected for either change in inventories or acquisitions less disposals of valuables³, this chapter is concerned primarily with the methods used to collect prices for GFCF.
- 6.2. GFCF is one of the seven main aggregates in the Eurostat-OECD expenditure classification. It comprises three expenditure categories: machinery and equipment (referred to throughout the rest of this chapter as “equipment goods”), construction and “other products”⁴. Together these three expenditure categories account for around 20 per cent of final expenditure on GDP in most EU Member States and OECD Member Countries. GFCF is therefore an important main aggregate.⁵ It is also one of the more difficult and costly for which to collect internationally comparable and representative prices.⁶ One reason for this is the complexity and variability of the products being priced. Construction projects, for example, are basically unique products even within the same country. It is because of this that Eurostat-OECD product specifications for equipment goods and construction projects are drawn up by engineers and quantity surveyors and not by statisticians. Another reason is that the expertise needed to draw up the Eurostat-OECD product specifications is also required to match and price them and this expertise is not usually available in most national statistical agencies. Typically the pricing of capital goods - particularly the pricing of construction projects - has to be contracted out to consultancy firms that specialise in engineering or in construction.
- 6.3. Eurostat-OECD comparisons are made by comparing the prices actually paid for comparable and representative products in the countries participating in the comparisons. Therefore, the products priced for a comparison of equipment good prices and a comparison of construction prices should be both comparable across the participating countries and representative of their price levels. In addition, the prices collected for these products should be transaction or market prices – that is, the prices that purchasers actually pay for the products to be delivered / assembled / installed / built in working order at the time and the place required by the purchasers. As such, they should include trade margins, transport and delivery cost, assembly and installation costs and non-deductible taxes on products. They should also be net prices inclusive of all discounts, surcharges and rebates. And they should be consistent with the prices underlying the expenditure estimates they are used to deflate – that is,

they should be national annual averages that reflect the level of prices over the whole of the country and over the whole of the reference year.

- 6.4. This chapter explains how national annual purchasers’ prices are to be collected for a comparable and representative set of equipment goods and construction projects within the framework of a Eurostat-OECD comparison. It has three parts. The first part deals with the survey of equipment good prices and the second part with the survey of construction prices. The price surveys are conducted once every two years.^{7 8} PPPs for GDP have to be calculated every year for EU Member States and EU associated countries⁹. Such calculations require PPPs for at least the principal expenditure groups and classes of GFCF. The third part of the chapter describes how PPPs for GFCF are estimated for the years in which there are no price surveys.
- 6.5. There is no price survey for “other products” – the third category of GFCF mentioned above. Of these products, only computer software is priced. It is included in the survey of equipment good prices and treated accordingly. Reference PPPs – or, more precisely, the overall PPPs for GFCF based on the prices collected for equipment goods and construction projects - are used for the “other products” that are not priced.

PART I: PRICING EQUIPMENT GOODS

General approach

- 6.6. The approach adopted for the survey of equipment good prices is similar to that followed for consumer goods and services – that is, specification pricing. This is the pricing methodology that involves the selection of a basket of precisely-defined products with a view to having comparable products priced in each country. The selection is made in consultation with the countries participating in the comparison. The products are defined in terms of characteristics that influence their purchasers’ price. The objective is to price to constant quality in order to produce price relatives between countries that reflect “pure” price differences. The characteristics specified cover both the product (performance, operation and quality) and the transaction (order size, discounts, delivery and installation). The products priced by countries should be identical, but, if they are not, they should at least be equivalent – that is, meet the same needs with equal efficiency. For equipment goods, this means that the products priced do not necessarily have to be the same make and model and that some deviation from the technical parameters is tolerated. Transaction characteristics have to be respected because countries are required to report actual transaction prices and not list or catalogue prices.

Box 6.1: Product specification and price reporting form⁽¹⁾

EQUIPMENT GOODS SURVEY 200X				Country
16.11: Tractor unit				Austria
Product		Proposed		Priced
Make (and nationality):		Mercedes Benz (German)		Scania (Swedish)
Model:		ABC-18-4x2		XYZ-19-4x2
Specifications		Metric	Imperial	National
01	GVW.	18000 kg	17.7 tons	19000 kg
02	Wheelbase	5700 mm	224 in	5500 mm
03	Engine capacity	11,946 l	729 cu in	12.0 l
04	Engine power output	292 kw	394 bhp	338 kw
05	Gearbox: number of forward speeds	16	16	14
06	Type of suspension: front	spring	spring	spring
07	Type of suspension: rear	air	air	air
08	Type of braking	ABS	ABS	ABS
09	Type of cab	1845 mm	73 in	1900 mm
10	With standard roof	yes	yes	yes
11	Fixed fifth wheel coupling	included	included	included
12				
Terms and conditions				
a	Order quantity	one	one	one
b	Unit price	one	one	10,500
c	Currency	specify	specify	euros
d	Delivery costs to be included	yes	yes	yes
e	Installation costs to be included	no	no	no
f	Discount to be included	yes (%)	yes (%)	(- 5%) - 525
Total unit price without VAT				9,975
Representativity and comparability				
Is the product priced representative (yes) or unrepresentative (no)?				yes
Is the product priced identical (1), equivalent (2) or not comparable (3) to the one specified?				2
Options				
Price of standard model. No options available.				
Notes				
The model specified is not available. Expected on the market early next year.				
Delivery costs not invoiced separately. Included in unit price.				
Website address				
www.mercedesbenz.com				

⁽¹⁾ Product specification and price reporting forms evolve from price survey to price survey. This example illustrates their basic format and content.

Product specification

6.7. An example of a product specification for an equipment good is given in Box 6.1. (It is also the price reporting form with countries completing the area in grey.) First, the type of equipment good is identified - a tractor unit in this case. Next, the proposed make and model to be priced are identified, though occasionally no make and model are proposed. The nationality of the manufacturer is also given, but, with globalisation, the location of a manufacturer's headquarters does not necessarily imply that this is where the product or its various components are manufactured or even assembled. The character-

istics of the product follow the identifiers. They are given in two parts. The first part specifies the technical parameters in both metric and imperial measures. These are broadly ranked in order of importance to assist matching. The second part specifies terms and conditions of sale - that is, the characteristics of the transaction. These are followed by two questions: one on the representativity of the product priced, the other on its comparability with the product specified. Finally, there are boxes in which to list options and extras and their prices and to note and explain deviations from the specification or the pricing guidelines. The website address of the manufacturer is also given for most products.

This can be visited by price collectors for further information, including pictures and lists of distributors of the products being surveyed.

- 6.8. Products specified for the equipment goods survey are new – that is, unused. Sales of used or second-hand equipment goods between resident producers cancel out for the economy as a whole and do not need to be taken into account when comparisons are made from the expenditure side.¹⁰ But imports of used or second-hand equipment goods are purchases from non-residents and are recorded as GFCF (and imports) by the importing country.¹¹ For some countries participating in Eurostat and OECD comparisons, a significant proportion of their GFCF in equipment goods comprises imports of reconditioned second-hand items. Experimental pricing of second-hand equipment goods shows that quality varies quite considerably both between and among the items priced by different countries. It is difficult to price comparable second-hand goods. Quality adjustments are necessary, but quality adjustments are not a feature of Eurostat-OECD methodology. Countries participating in Eurostat and OECD comparisons are required to price new, unused items only. Prices of second-hand items are not accepted even when such items are the more representative.

Representativity

- 6.9. In the surveys of consumer prices, comparability and representativity are obtained by countries pricing the products they have nominated for the product list - that is, their representative products - and a selection of the products that other countries have nominated for the product list - that is, the representative products of others. Subsequently, when reporting prices, countries indicate which of the products priced are representative for them and this is taken into account when calculating the PPPs for consumer goods and services. The complexity of equipment goods, the variation in purchasing patterns among countries, the number of countries being compared and resource constraints means that this approach cannot be followed by the equipment goods survey. Instead, the equipment goods survey focuses initially on the pricing of comparable products - that is, products that are identical or equivalent. Countries are still expected to price representative products whenever feasible - that is, when it does not compromise comparability. They are also required to stipulate on the reporting form whether the product they have priced is representative or not. The information is used both in the validation of prices and in the calculation of PPPs.
- 6.10. Representativity is introduced into the equipment goods survey by including in the product list a number of alternative specifications for the same product. This allows the different factors that can influence a country's purchasing patterns – factors such as domestic producers, traditional trade links, average size of farms and factories, etc. - to be accom-

modated. This approach is illustrated by the pricing schedule for the 2003 survey in Box 6.2. A total of 116 products have been selected to cover the seventeen basic headings listed and a total of 235 alternative specifications have been defined. This is an average of two alternatives per product with a range of one to five alternatives depending on the product. The extent to which the products and their alternatives included on the product list are representative of participating countries depends on the efforts that countries invest in the pre-survey they are required to make of their national markets prior to the finalising of the product list.

- 6.11. The pricing schedule in Box 6.2 also indicates the minimum number of products that should be priced for each basic heading. The number of products that countries actually price will be more than the minimum for many basic headings. Countries are expected to determine the number of products they price for a basic heading by the importance of the basic heading - as measured by its share of GFCF - and the degree of price variation within the basic heading - as determined by the previous equipment goods survey¹². The number of alternative specifications priced will be greater than the number of products priced because countries are required to price more than one alternative per product when a product has more than one alternative specified. This is to facilitate the matching of products across countries. Whether participating countries can actually price the stipulated number of products and alternatives per basic heading depends on the resources they devote to the pre-survey.

Pre-survey

- 6.12. EU Member States and EU associated countries survey equipment good prices every two years. The product lists for the surveys are established during the year prior to the year the survey is to be held. Early in the second half of the interim year, Eurostat convenes a meeting of participating countries. The meeting has two main objectives: to evaluate the price data collected and the experiences gained during the previous year's survey and to initiate the process of selecting the products that are to be priced in the following year's survey. The starting point of the selection process is the product list from the former survey. Together, Eurostat and the countries first review the distribution of products over the basic headings. By taking account of their importance and price variation, they identify the basic headings that should have their number of products increased and the basic headings that should have their number of products reduced. Having considered the overall balance of the list, Eurostat and the countries then examine it basic heading by basic heading. Out-of-date product specifications are removed, retained product specifications are updated and new product specifications are added. Following the meeting, Eurostat modifies the list accordingly, thereby producing the draft product list for the forthcoming equipment goods survey.

Box 6.2: Pricing schedule, 2003⁽¹⁾

Expenditure classification code	Price collecting code	Basic heading	Number of products	Number of alternative specifications	Minimum number of products to be priced
15.01.11.1	01.	Fabricated metal products, except machinery and equipment	5	13	3
15.01.12.1	02.	Engines and turbines, pumps and compressors	4	6	3
15.01.12.2	03.	Other general purpose machinery	6	17	4
15.01.13.1	04.	Agricultural and forestry machinery	10	28	5
15.01.13.2	05.	Machine tools	7	11	5
15.01.13.3	06.	Machinery for metallurgy, mining, quarrying and construction	5	9	3
15.01.13.4	07.	Machinery for food, beverages and tobacco processing	5	15	3
15.01.13.5	08.	Machinery for textile, apparel and leather production	7	12	5
15.01.13.6	09.	Other special purpose machinery	6	17	5
15.01.14.1	10.	Office machinery	4	9	3
15.01.14.2	11.	Computers and other information processing equipment	7	13	6
15.01.14.3	12.	Electrical machinery and apparatus	6	15	4
15.01.14.4	13.	Radio, television and communications equipment and apparatus	5	5	4
15.01.14.5	14.	Medical, precision and optical instruments, watches and clocks	11	22	7
15.01.15.1	15.	Other manufactured goods n.e.c.	3	6	3
15.01.21.1	16.	Motor vehicles, trailers and semi-trailers	18	30	12
15.03.12.1	17.	Software	7	7	5
Total			116	235	80

⁽¹⁾ The pricing schedule is not fixed. It evolves from price survey to price survey.

6.13. Before it can be finalised, the draft product list has to be pre-surveyed – that is, the countries have to assess the list in the dual perspective of what is available in their national markets and what is representative of their national markets. The pre-survey is carried out by countries in the fourth quarter of the interim year after they have received the draft product list from Eurostat. Based on their comments and proposals, Eurostat modifies the product list further. Existing product specifications are either dropped, modified or accepted, new product specifications are added. This constitutes the final product list which is to be priced during April and May of the survey year. The success of the pricing exercise depends on the thoroughness of the pre-survey. Countries who have invested their time in conducting a comprehensive pre-survey should experience little difficulty in pricing the required number of products and representative alternatives. More importantly, their dialogue with Eurostat, both during the pre-survey and prior to the finalising of the product list, should greatly facilitate the pricing of identical products.

Equivalent products

6.14. Countries are expected to price products that are identical to those specified – that is, products which are the same make and model with the same technical parameters. This is not always possible. Either the make and model specified are unavailable on their national market or, if the make is available, the model specified is not. In these circumstances,

countries are required to price equivalent products instead. This may mean that they price the same make, but a different model, or that they price a different make. Either way, pricing equivalent products necessitates flexibility in the interpretation of product specifications. Flexibility has to be exercised with caution. A too liberal interpretation will result in the loss of comparability. A too strict adherence to the specifications can mean that items cannot be priced. To avoid either of these extremes, the following should be borne in mind:

- Equivalent products should be selected by matching the technical parameters of the makes and models that are available in the country with the technical parameters of the specified make and model.¹³ The technical parameters listed in the specifications are ranked in order of importance. They refer to performance (capacity, power, speed, size, output, etc.), to operation (number of speeds, source of power, type of controls, etc.), and to quality (materials of manufacture, weight, resistance, etc.). When matching technical parameters, countries should adhere to the performance parameters as closely as possible. The parameters relating to operation and quality can be interpreted with greater flexibility. Usually a substitution is acceptable when the parameter affected by the deviation accounts for only a small share of the total price.
- If, after matching the technical parameters, more than one make and model is found to be equivalent, preference should be shown to the make

and the model that is the most representative all other things being equal. In this respect, countries should not hesitate to price a national make when its model is the most representative. The fact that the model is not exported and cannot be priced elsewhere is not a consideration since the matching of makes and models across countries is done on the basis of the technical parameters reported by countries.

Reporting items and their prices

6.15. The product specifications are also the price reporting forms. They are provided to countries in an electronic file. Countries are required to use this electronic file to report the details of the items they priced and the prices they collected. Completed reporting forms are to be returned to Eurostat or the OECD. An example of a completed reporting form is shown in Box 6.1. Countries complete the areas in grey. When completing the price reporting form, countries are required:

- To state the makes and models selected and to provide their technical parameters so as to facilitate the matching of models across countries. The provision of technical parameters is necessary even when countries price the make and model proposed. Experience has shown that the same make and model may not be sold with the same technical parameters in all countries. The provision of technical parameters is particularly important when countries select and price a model different from that specified.
- To specify which accessories are included in the price provided. Countries should report the price of the basic machine as specified and the prices for the commonest accessories and optional extras individually. Equipment goods are not necessarily sold with the same accessories in all countries. What is an accessory in one country can be an option in another. When the prices of the various components of highly complex items of equipment are known, this permits greater flexibility in determining composite prices for the item and matching the prices across countries.
- To state whether the product priced is representative (yes) or unrepresentative (no). In other words, to indicate whether or not the product's price level is representative of the price level in the country for that type of product. Representative products are usually those most frequently sold. As representative products generally have lower price levels than unrepresentative products, it is necessary to know about the representativity of products when validating their prices and calculating their PPPs.
- To state whether the product priced is identical (1), equivalent (2) or not comparable (3)¹⁴ to the product specified. In other words, to indicate the degree to which the technical parameters of

the product priced match those of the product specified. It is preferable that the pricing experts within the countries, with their engineering experience or contacts, make this assessment, rather than the statisticians at Eurostat or the OECD. The information is essential for price validation.

- To report purchasers' prices without VAT - that is, the total, net of VAT, of the amounts that purchasers actually pay for the item of equipment to be delivered, assembled and installed in working order at the production site where it will be used. The price should include trade margins, transport and delivery costs, assembly and, when relevant, installation costs because these are all considered to be part of capital expenditure. The price should also be net of discounts. It should not include VAT.

Transport and delivery costs are influenced by the circumstances of national geography and economic development. They depend as well on the type of good and the way it is marketed. When prices of equipment goods do not already include transport and delivery costs, they should be added. In the absence of detailed information about these costs, they should be estimated by countries selecting their own average distance over which the items priced are transported and delivered.

The cases where equipment goods have to be *assembled and installed* are indicated in the product specifications. If there is an extra charge for erection or start up supervision by the manufacturer this should be added to the price.

Discounts depend on a number of variables: national practices, the prevailing economic climate, the size of the order, the purchaser's negotiating power, etc. Although it is not possible to produce identical conditions in all countries, certain variables, such as the number of units bought or the period allowed for payment, can be fixed uniformly. These variables are listed in the specifications. Otherwise, only general discounts - that is, those that are available for most of the year and which are granted to the majority of purchasers should be taken into account.

Purchasers' prices should include the *amounts of VAT that are not deductible* and entail actual expenditure for the purchaser. For many capital items, VAT is wholly or partly deductible for most purchasers. The experts pricing the equipment goods will not know the actual rate of VAT paid. And the information will not be available at the time the equipment goods are priced. Countries are therefore required to report prices without VAT. After the close of the survey year, the national statistical agencies responsible for their national accounts will report the rate of non-deductible VAT on equipment goods for the survey year - that is, they will report the rate of VAT actually paid by purchasers of equipment goods in

the survey year. Eurostat will use this global rate to adjust the prices reported to include non-deductible VAT.¹⁵

- To report purchasers' prices without VAT that are national averages - that is, prices that reflect the level of prices over the whole of the national territory and take into account any regional disparities in prices. Generally, it is easy to report national averages because, in the case of most equipment goods, the national market is dominated by national producers or by international companies which either sell their product on the same terms throughout the country or can give information about any price differences that apply.
- To report purchasers' prices without VAT that are annual averages - that is, prices that reflect the level of national prices over the whole year. But, as it would be too costly to record prices throughout the year, countries are only required to provide national average prices for April¹⁶ of the survey year.

Source of prices

- 6.16. The prices can be obtained directly from producers, importers or distributors or from their catalogues. They may even be obtained from actual purchasers – which, although preferable in principle, is difficult in practice. The prices can be collected by whichever method, or combination of methods, countries find the most convenient - personal visit, telephone, letter, internet, etc. But whatever the source, whatever the method, strict conformity to the concept of purchasers' price as defined in the previous section - that is, purchasers' price without VAT - is essential in all cases.
- 6.17. Some participating countries obtain prices through their producer price index (PPI). Either they are able to match the equipment good specifications directly with product specifications used for the PPI or they request the PPI respondents who are producers of the types of equipment goods being surveyed to price the equipment good specifications. PPIs generally collect basic prices or producers' prices. Basic prices need to be reduced by any subsidies on products and increased by any non-deductible taxes on products paid by producers to obtain producers' prices. It is then necessary to add on any trade margins, transport and delivery costs, and assembly and installation costs paid by purchasers to obtain purchasers' prices net of VAT.

Validation of prices

- 6.18. Countries provide Eurostat or the OECD with an "average" price - the national purchasers' price in April of the survey year - for each item of equipment good they have priced. These averages are based on a very small number of price observations - one outlet or source for most items. Countries cannot

implement the same checks for internal consistency that they apply to the price observations for consumer products prior to reporting them. The validation procedures followed by Eurostat and the OECD for equipment good prices rely heavily on the reporting forms being filled out in full. Before sending their prices to Eurostat or the OECD, countries are required to verify that the reporting forms are complete with each make and model priced having its name and number, its technical and transaction characteristics, its representativity and comparability, and its commonest accessories and optional items - with their prices - recorded. It is in the interest of countries to provide these details from the beginning as it will reduce the response burden that editing imposes.

- 6.19. Eurostat and the OECD use the Quaranta editing procedure to validate the prices of consumer products. Verifying the prices of equipment goods by price alone is not sufficient because of the complexity of the items priced. The fact that prices for an item appear consistent across countries does not mean that the items priced are comparable across countries. The technical parameters of the items will still have to be checked against each other and mismatches identified. Before applying the Quaranta editing procedure to equipment good prices, Eurostat and the OECD compare the technical parameters of the products priced first.¹⁷ Products are sorted into three groups on the basis of the comparability of their technical parameters with those of their product specifications as reported by countries, namely: identical, equivalent and not comparable.
- 6.20. Further distinctions are subsequently made. Products with technical parameters identical to those of the product specification are left as they are and stay matched with the product specification. Products with technical parameters equivalent to those of the product specification are checked against each other to see whether there are any with identical technical parameters – that is, have two or more countries in pricing an equivalent rather than an identical product for a given product specification actually priced the same product. Products that have matching technical parameters are treated as new alternative specifications. Products that do not remain matched against the original specification. The new alternative specifications are called "splittings" because they are split off from the specifications with which they were initially associated to become specifications in their own right. Finally, the products whose technical parameters are not comparable with those of the product specification are screened to see whether any among them have identical technical parameters. Splittings are made for those that do. Those that do not are discarded.

- 6.21. As a result of this edit, the products priced can be classified as:
- those with technical parameters that are identical to those of a product specification established prior to the price survey;

- those with technical parameters that are equivalent to those of a product specification established prior to the price survey;
- those with technical parameters that are identical to those of a product specification established retrospectively - that is, a splitting.

6.22. This makes it easier to interpret the Quaranta editing procedure. If the prices reported for a product specification are shown to be consistent across countries, it is reasonable to assume that they refer to comparable items. Whereas when outliers are identified, the error, if any, is more likely to be an incorrect price than an incorrect match. Outliers are referred back to the reporting country. It is asked to confirm or to correct the price. Depending on the country's response, the price of the outlier is either retained, replaced or dropped.

PART II: PRICING CONSTRUCTION PROJECTS

General approach

- 6.23. Three main types of construction "price" indices are compiled in EU Member States and OECD Member Countries. The first, which is not a price index but a cost index, involves collecting the prices of a basket of inputs covering different labour skills (general labourer, bricklayer, carpenter, plumber, etc.), standard building materials (cement, sand, metal rods, bricks, etc.) and plant (trucks, bulldozers, excavators, cranes, etc.).¹⁸ The second, which is a "half-way house" between a cost index and a price index, entails pricing a set of standard components or operations such as "constructing so many square metres of brick wall" or "laying of so many square metres of roofing tiles" or "installing a hot water boiler of a given capacity".¹⁹ The third, which is a price index, requires pricing actual or model construction projects. Of the methods underlying these indices, only that of the third type of index is capable of generating the purchasers' prices required for Eurostat-OECD comparisons of construction prices. It is also the expensive method. It requires expertise which most national statistical agencies do not have and the pricing usually has to be contracted out to consultants.
- 6.24. The objective of Eurostat-OECD comparisons of construction prices is to compare the purchasers' prices actually paid for comparable and representative buildings and civil engineering works across participating countries. In practice the complexity and the country-specific nature of the products of the construction industry make it difficult to achieve both complete comparability and representativity in the same comparison. In the comparison of consumer prices, comparability and representativity are obtained when countries price both representative products - that is, the products they have proposed for the product list - and unrepresentative products - that is, the products other countries have proposed for the product list. Given the number of countries

being compared, the types of constructions covered and the fact that the pricing has to be contracted out to experts, it would be prohibitively expensive to apply this approach in the comparison of construction prices. Another approach has to be employed instead.

- 6.25. The main approaches to international comparisons of construction prices are as follows. First, an identical construction can be priced by experts in each country. With this approach, the constructions and their prices will be comparable across countries but not necessarily representative of any country or group of countries. Second, the experts can provide the price for a typical construction of a specified type in their country. With this approach, the constructions and their prices will be representative of each country although not necessarily comparable across countries. Third, a standard construction, that may be modified to accommodate different national circumstances and practices, can be priced by experts in each country. With this approach, the constructions and their prices will be less comparable across countries but more representative of each country. Of these approaches, the first emphasises comparability, the second representativity and the third is a compromise between the two. It is the third approach that Eurostat and the OECD have adopted for the survey of construction prices.
- 6.26. The approach, although a compromise, favours comparability. Even so, when calculating PPPs for construction, the representativeness of the constructions priced is taken into account. Countries are required to indicate which of the constructions they priced are representative when reporting their prices. Representativity is introduced into the survey of construction prices in much the same way as it is introduced into the equipment goods survey - that is, by giving countries the possibility of pricing more representative alternatives and by allowing countries some flexibility in the interpretation of the product specifications.

Standard construction projects

- 6.27. Countries participating in Eurostat and OECD construction price comparisons are required to price a number of standard, but fictitious, construction projects covering different types of residential buildings, non-residential buildings and civil engineering works. The standard construction projects are listed in Box 6.3. The list reflects the view of construction experts that representativity - when assessed in terms of variation among countries - is an important consideration for residential buildings, but less important for non-residential buildings and even less so for civil engineering works. The standard construction projects for the single-family house are specific to individual countries or groups of countries while the projects for other constructions are common to all. Countries are currently expected to price nine projects in total - three residential buildings, three non-residential buildings and three civil engineering works.

Box 6.3: Standard construction projects

15.02.11.0 Residential buildings	
01.	European single-family house
02.	Portuguese single-family house
03.	Nordic single-family house
04.	Apartment in a multi-apartment building
05.	<i>North American single-family house</i>
06.	<i>Japanese single-family house</i>
07.	<i>Australasian house</i>
15.02.21.0 Non-residential buildings	
08.	Agricultural shed
09.	European factory building
10.	Office building
11.	Primary school
12.	<i>Japanese factory building</i>
15.02.31.0 Civil engineering works	
13.	Asphalt road
14.	Concrete road
15.	Bridge
16.	Concrete main sewer

The choice of pricing projects 05, 06, 07 and 12 is restricted to countries working directly with the OECD.

Box 6.4: An example of a major component and its elementary components

<i>Item specification</i>	<i>Unit</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Total Price</i>
3. Masonry			(national currency)	(national currency)
3.1 Ground floor double-skin external wall:				
• 20 cm sand-lime brickwork + 11 cm facing brickwork, inclusive of pointing and acid cleaning	m ²	257	17	4369
• Plastering	m ²	257	8	2056
3.2 Upper floors double skin external wall:				
• 11 cm sand lime brickwork + 10 cm facing brickwork, inclusive of pointing and acid cleaning	m ²	413	18	7434
• Plastering	m ²	413	8	3304
3.3 Gable ends, 11 cm facing bricks, inclusive of pointing and acid cleaning	m ²	625	18	11250
3.4 Fair-finish 7 cm plaster block work	m ²	585	7	4095
Total				32508

Box 6.5: An example of a summary sheet detailing major components

	(national currency)
01. Earthworks	2489
02. Concrete	28985
03. Masonry.	32508
04. Roofing	16220
05. Joinery	26732
06. Metal joinery	2443
07. Sanitary installations	12825
08. Central heating	10182
09. Electrical installations	6777
10. Ventilation	715
11. Coverings	35097
A. Overall price of work done (01 + 02 + + 11)	174973
B. Architect's and engineer's fees (5% ⁽¹⁾ of A)	8749
Total price without VAT (A + B)	183722

⁽¹⁾ Standard rate prevailing in the country. The 5% is for illustration only.

- 6.28. Although not real constructions, the standard construction projects are based on actual construction methods and practices. Like actual construction projects, they consist of a number of major components, such as earthworks, concrete, masonry, joinery, roofing, etc. Each major component comprises a number of elementary components, such as the mechanical excavation of the terrain, the mechanical excavation of foundation trenches, the supply, transport, dumping and compacting of spoil for foundation trenches, the supply, transport, dumping and compacting of crushed aggregate for foundation trenches, etc. Each standard construction project has its major components and their elementary components itemised and defined in a product specification called a “bill of quantities”. In addition to detailing the components, the bill of quantities also provides a “preamble” describing the project, its location and other factors that need to be taken into account when pricing it.²⁰ Each bill is accompanied by a set of technical drawings.
- 6.29. For pricing purposes, the elementary components of the standard projects are detailed in bills of quantities as shown in Box 6.4. The total price for the elementary component is computed by multiplying the unit price in national currency units (NCUs) by the quantity specified. For example, the total price of brickwork for the ground floor external wall as specified in Box 6.4 is 4,369 NCUs – that is, 257 square metres multiplied by a unit price of 17 NCUs per square metre. By summing the total prices of its elementary components, a total price can be determined for each major component. The total price for masonry as detailed in Box 6.4 is 32,508 NCUs. By summing the total prices of the major components, an overall price for work done can be obtained. Each bill of quantity has a summary sheet such as that in Box 6.5 specifically for this purpose. The overall price for work done is not the final price of the project. It needs to be augmented by architects’ and engineers’ fees and by non-deductible taxes on products in order to arrive at the desired purchasers’ price. But, as explained later, countries are only required to supply the overall price for work done and the architects’ and engineers’ fees when completing the summary sheet.
- 6.30. Experience shows that about 50 per cent of the elementary components that go to make up a whole construction account for around 90 per cent of the overall price for the work done. It has also been established that PPPs based on this 50 per cent do not differ significantly from PPPs based on all elementary components. The bills of quantities for the standard construction projects list only the elementary components that are the principal contributors to the overall price for work done and not all the elementary components required to complete the projects. They are sometimes called “reduced bills of quantities” because of this.^{21 22}

Variants and compromise quantities

- 6.31. The bills of quantities have been designed to be representative of actual constructions to be found in participating countries with regard to their shape and size, their finish, their internal fittings and, to a lesser extent, to the construction materials and methods used. Since there is a close connection between the construction materials used and the construction methods adopted, and since both materials and methods vary between countries, variants for a number of elementary components are included in the bills of quantities to improve their representativity. When pricing components with variants, countries should attempt to price all the alternatives indicating which are nearest to the materials and methods most widely used by them. This is to facilitate the matching of the standard construction projects and their variants across countries.
- 6.32. For certain elementary components in the bills of quantities, such as glazing, insulation, heating and air conditioning, specifications have been drawn up which represent a compromise between the norms that commonly apply in participating countries. For example, it may be that the volume of heating specified in a bill of quantities is too high for countries with a warm or hot climate and too low for countries with a temperate or cold climate. For these items, it is essential for comparability that countries price the compromise quantities specified.

Flexibility in interpretation

- 6.33. For each standard construction project the same bill of quantities is priced in each country so that, in principle, all countries pricing a specific bill of quantities are pricing a comparable product. In practice, this is not necessarily so. Materials and methods of construction can vary between countries. National standards and regulations can also differ between countries. Some flexibility of interpretation has to be allowed if countries are to provide prices that are representative.
- 6.34. The general rule to be followed with regard to flexibility of interpretation is that, if strict adherence to the specification means that the component cannot be easily priced or leads to special pricing, a more readily available substitute should be priced instead because the aim of the exercise is to avoid unrepresentative prices as far as possible. For example:
- Wall thicknesses are often governed by the sizes of bricks and, since standard measurements of bricks are not identical in all countries, each country should price the national standard brick which gives the wall thickness closest to that specified.

- The type of brick may also vary from country to country. Countries should price the type of brick which for them is most usual.
 - Standard measurements of doors, windows and other joinery work are not the same in all countries. Countries should price the national standard measurements which are closest to those specified.
 - National standards and regulations applicable to electrical and other fittings also differ. Countries should comply with their own regulations when pricing these items.
- 6.35. Care should be taken that flexible interpretation does not become too liberal and result in marked differences in quality or in a different construction being priced. Substituting concrete bricks for clay bricks is allowed, replacing a brick wall by one of reinforced concrete is not. The dividing line between these two extremes is a grey area and it is left to the individual countries themselves to decide what can or can not be substituted. Usually substitutions are acceptable when the components affected represent only a small share of the total price and the basic features of the construction remain unchanged. When substitutions are made, they should be clearly identified and explained in the bill of quantities.
- ### Unit prices
- 6.36. When pricing the bills of quantities, a distinction has to be drawn between “producer’s cost” and “purchaser’s price”. The “producer’s cost” of a construction is what it costs the contractor to build it. The “purchaser’s price” of a construction is what the purchaser pays the contractor for it. The prices that countries should provide for the standard construction projects are purchasers’ prices - that is, the prices that purchasers would pay for the standard construction projects if they were actually built and marketed.
- 6.37. The unit prices used in the bills of quantities must cover not only the producer’s direct cost for each of the specified elementary components (such as materials, labour, hire of equipment, sub-contractors’ fees), but also the contractor’s profits (or losses), and the general expenses (including share of main office overheads) and preliminary expenses (including the cost of site preparation) connected with the construction. The unit prices do not include architects’ and engineers’ fees and non-deductible VAT. These are added after the overall price of work has been established. Nor do the unit prices include the expenditure incurred for the purchase of the land. But in this case no addition is made to the overall price of work either for the cost of the land itself or for the financial and other costs associated with the transfer of ownership.
- *General and preliminary expenses* comprise overhead costs, start up costs and contractor’s profit (or loss). Although they are not specified in the bills of quantities, these costs are to be included in the unit prices all the same. Box 6.6 lists the items which general and preliminary expenses usually cover. The general guideline to be followed by countries with regard to such costs is that they are to be included if the contractor is obliged by law to pay them or required by the standard contracting practice of the country to pay them.
 - *Architects’ fees and engineers’ fees* are percentage additions made after all the components specified in the bill of quantities have been priced and summed. The fees are to cover both the realisation of the project and the supervision of works. Box 6.7 details the services which the fees should normally cover though these may be subject to some variation in line with standard practice in the country concerned.
 - *Non-deductible VAT* entails actual expenditure for the purchaser and should be covered in the purchasers’ prices of the standard construction projects. Usually it is levied on the overall cost of the construction - that is, the overall price of work done plus architects’ and engineers’ fees - and treated as a percentage addition. VAT is wholly or partly deductible for most purchasers of capital goods and so the standard rate of VAT is not the same as the rate based on what was actually paid. The experts pricing the bills of quantities will not know the actual rate of VAT paid. And the information will not be available at the time the bills of quantities are priced. Countries are required to report the prices of the standard construction projects without VAT. Following the close of the survey year, the national statistical agencies that are responsible for their national accounts will report the rate of non-deductible VAT on buildings and civil engineering works for the survey year – that is, they will report the rate of VAT actually paid by purchasers of buildings and civil engineering works in the survey year. Eurostat will apply this global rate to adjust the prices reported to include non-deductible VAT.²³
- 6.38. Countries are required to report unit prices that are national averages - that is, prices that reflect the level of prices over the whole of the national territory and take account of any regional disparities in prices. In principle, the national unit prices should be the weighted averages of regional unit prices, with regional unit prices being weighted by regional shares of national construction output. In practice, this may not be possible and the national unit prices will have to be estimated. How this is done should be clearly explained on the price reporting form.

Box 6.6: Coverage of general and preliminary expenses

The following are among the items not specified in the bills of quantities, but the cost of which should be included in the unit prices:

- The taking out of a builder's all-risk insurance which includes public liability cover, contractor's liability cover, fire insurance, earthquake insurance, and any other cover or insurance usually required by the standard contract.
- The giving and placing of all notices and notifications, the obtaining of the necessary permits, the paying of all associated charges and any other statutory fees or local taxes that may be required.
- The setting out of the works, including a set-out guide for subcontractors, and the paying of any registered surveyor's fees.
- The provision of a temporary power supply and the paying of all charges associated with its connection and use.
- The provision of a temporary water supply and the paying of all charges associated with its connection and use.
- The provision of a temporary telephone and the paying of all charges associated with its connection and use.
- The provision and maintenance of temporary toilet and washing facilities and the paying of all associated charges.
- The provision of a site office, a mess-room or other accommodation for the workers, and facilities for the storage of material and tools, and their subsequent removal on completion of the works.
- The provision and maintenance of a suitably placed job sign board and its subsequent removal on completion of the works.
- The provision and maintenance of competent managers or foremen to supervise the works.
- The provision and maintenance of any temporary fences or barriers required for the security of the works or for safety precautions.
- The provision of temporary scaffolding and trestles.
- The provision of a banker's guarantee or a performance bond as usually required by the standard contract.
- The removal of all rubbish from site as it accumulates and at the completion of the works.
- The cleaning of the building, inside and out, and the removal of all stains, etc., to the satisfaction of the supervisor.
- The protection of other property from damage.
- The share of main office overheads.
- Other preliminary expenses not elsewhere specified:
 - Provision of working drawings,
 - Plant which is not readily allocated to specific work items (such as a tower crane),
 - Furnished office for clerk of works (including telephone, telephone charges and heating)
 - Temporary roads or hard standing,
 - Compliance with statutory requirements in relation to working conditions.
 - Profit (loss) of the contractor.

6.39. Countries should also report unit prices that are annual averages - that is, prices that reflect the level of national prices over the whole year. But, as it would be too costly to record prices throughout the year, countries are only required to provide the national average prices prevailing in April²⁴ of the survey year.

Reporting prices

6.40. The bills of quantities are also the price reporting forms. They are provided to countries in an electronic file. When filling out the bills of quantities, countries need only to enter the unit prices for the elementary units and the percentages that need to be added for architect's and engineer's fees as the bills of quantities are programmed to complete themselves. Completed bills of quantities are to be returned to Eurostat or the OECD.

Sources of prices

6.41. The unit prices with which to value the elementary components of the bills of quantities can be obtained either from actual bills of quantities that have been valued for tenders submitted by construction companies or from one of the computerised systems of unit costs that major consultancy firms and research institutes maintain for the construction industry. If the first source is adopted, only unit prices from tenders that have been successful - or from tenders that can be considered realistic because they would permit the carrying out of work in good condition - should be used to value the standard construction projects. Tenders may vary by up to 30 or 40 per cent and so not accurately reflect actual prices. Extreme prices, be they high or low, must be excluded.

Box 6.7: Coverage of architects' and engineers' fees

Preliminary Services	
Work stage A:	Inception <ul style="list-style-type: none">– Discuss the client's requirements including timescale and any financial limits; assess these and give general advice on how to proceed; agree the architect's services.– Obtain from the client information on ownership and any lessors and lessees of the site, any existing buildings on the site, boundary fences and other enclosures, and any known easement, encroachments, underground services, rights of way, rights of support and other relevant matters.– Visit the site and carry out an initial appraisal.– Advise on the need for other consultants' services and on the scope of these services.– Advise on the need for specialist contractors, sub-contractors and suppliers to design and execute part of the works to comply with the architect's requirements.– Advise on the need for site staff.– Prepare where required an outline timetable and fee basis for further services for the client's approval.
Work stage B:	Feasibility <ul style="list-style-type: none">– Carry out such studies as may be necessary to determine the feasibility of the client's requirements; review with the client alternative design and construction approaches and cost implications; advise on the need to obtain planning permissions, approvals under building acts or regulations, and other similar statutory requirements.
Basic Services	
Work stage C:	Outline proposals <ul style="list-style-type: none">– With other consultants where appointed, analyse the client's requirements; prepare outline proposals and an approximation of the construction cost for the client's preliminary approval.
Work stage D:	Scheme design <ul style="list-style-type: none">– With other consultants where appointed develop a scheme design from the outline proposals taking into account amendments requested by the client; prepare a cost estimate; where applicable give an indication of possible start and completion dates for the building contract. The scheme design will illustrate the size and character of the project in sufficient detail to enable the client to agree the spatial arrangements, materials and appearance.– With other consultants where appointed, advise the client of the implications of any subsequent changes on the cost of the project and on the overall programme.– Make where required application for planning permission. The permission itself is beyond the architect's control and no guarantee that it will be granted can be given.
Work stage E:	Detail Design <ul style="list-style-type: none">– With other consultants where appointed, develop the scheme design; obtain the client's approval of the type of construction, quality of materials and standard of workmanship; co-ordinate any design work done by consultants, specialist contractors, sub-contractors and suppliers; obtain quotations and other information in connection with specialist work.– With other consultants where appointed, carry out cost checks as necessary; advise the client of the consequences of any subsequent change on the cost and programme.– Make and negotiate where required applications for approvals under building acts, regulations or other statutory requirements.
Work stages F and G:	Production information and bills of quantities <ul style="list-style-type: none">– With other consultants where appointed, prepare production information including drawings, schedules and specification of material and workmanship; provide information for bills of quantities, if any, to be prepared: all information complete in sufficient detail to enable a contractor to prepare a tender.

Box 6.7: Coverage of architects' and engineers' fees (contd.)

Work stage H:	<p>Tender action</p> <ul style="list-style-type: none"> – Arrange, where relevant, for other contracts to be let prior to the contractor commencing work. – Advise on and obtain the client's approval to a list of tenderers. – Invite tenders from approved contractors; appraise and advise on tenders submitted. Alternatively, arrange for a price to be negotiated with a contractor.
Work stage I:	<p>Project planning</p> <ul style="list-style-type: none"> – Advise the client on the appointment of contractor and on the responsibilities of the client, contractor and architect under the terms of the building contract; where required prepare the building contract and arrange for it to be signed by the client and the contractor; provide production information as required by the building contract.
Work stage J:	<p>Operations on site</p> <ul style="list-style-type: none"> – Administer the terms of the building contract during operations on site. – Visit the site as appropriate to inspect generally the progress and quantity of the work. – With other consultants where appointed, make where required periodic financial reports to the client including the effect of any variations on the construction cost.
Work stage K:	<p>Completion</p> <ul style="list-style-type: none"> – Administer the terms of the building contract relating to the completion of the work. – Give general guidance on maintenance. – Provide the client with a set of drawings showing the building and the main lines drainage; arrange for drawings of the services installations to be provided.

6.42. If the second source is employed, the standard construction projects will be valued at resource cost and not at purchasers' prices. It is necessary to adjust the underlying unit costs to unit prices using the total prices of successful tenders to establish the level to which the unit costs have to be raised. Of the two sources, the second is preferable to the first because it provides internationally comparable unit prices. Total tender prices may be realistic, but the unit prices used to value individual elementary components may not be. Contractors modify unit prices - understating some, overstating others - for a number of reasons such as improving their cash flow. The first objective of the pricing exercise is to obtain internationally comparable total prices for the standard construction projects so either source is acceptable.

6.44. This involves taking the summary sheets of the projects priced in the current survey and comparing them with the summary sheets for the same projects from the previous survey. The object of the review is to see whether the contribution to the total price of each major component is approximately the same in both surveys and, if it is not, to check the unit prices of its elementary components across the two surveys. There are three possible outcomes: both sets of unit prices are correct, the unit prices of the previous survey are wrong or the unit prices of the current survey are wrong. If the unit prices of the current survey are wrong, they should be corrected. If the unit prices are correct for both surveys or if the unit prices for the previous survey are wrong, Eurostat and the OECD should be informed of this at the time of reporting prices. This will avoid additional response burden on countries when the edit is repeated by Eurostat and the OECD.

Validation of prices

6.43. The bills of quantities are designed to provide a single total price – the national purchasers' price for April of the survey year - for each standard construction project and for each of its variants. Since bills of quantities are priced only once within a country, countries cannot implement the same editing procedures that they are required to follow for consumer products prior to reporting prices. Unlike the price surveys for consumer products and equipment goods, the product list for the construction price survey is comparatively stable over time. The bills of quantities do not change, or change only marginally, from one survey to the next. Another edit can be employed by countries instead.

6.45. Eurostat and the OECD apply the Quaranta editing procedure to detect outliers by comparing the total prices for the standard construction projects and their variants across countries. Editing bills of quantities by total price alone is not sufficient. Outliers do not necessarily mean that the projects priced are not comparable, while, conversely, the absence of outliers does not necessarily mean that the projects priced are comparable. Additional validation at lower levels of aggregation is needed. The validation is carried out at the level of major components initially. For ease of application and of comprehension, Eurostat and the OECD do not employ the Quaranta editing procedure at this level. An edit similar to the inter-temporal edit just described is used in-

stead. This involves matching the summary sheets for the projects priced by countries and comparing them to establish whether the contribution of each major component to total price is approximately the same in each country. If they are not, the shares of the elementary components to the total price of the major component under review are then compared to see whether there are any questionable unit prices. Suspect unit prices are referred back to the countries reporting them for correction or confirmation that they are correct.²⁵

PART III: ESTIMATION OF PPPS FOR GFCF IN INTERIM YEARS

6.46. Eurostat is required to calculate PPPs for GDP and its component final expenditures every year for EU Member States and EU associated countries. To do this, it has to have PPPs for all basic headings, including those comprising GFCF, for the year in question. Although the programme of price collection is continuous, not all goods and services are priced each year. Most consumer products are priced once every three years and capital goods are priced once every two years. PPPs cannot be calculated for all basic headings every year. Other means have to be employed to obtain the PPPs for those basic headings for which PPPs cannot be calculated.

6.47. For consumer products that are priced every three years, the basic heading PPPs they generate are advanced through time using corresponding sub-indices from the CPI. This is not an option for capital goods as the majority of participating countries do not have the price indices required. Attempts to apply implicit price deflators from the national accounts have not been successful because they are available only at a broad level of aggregation. Instead of extrapolation, Eurostat has decided to employ interpolation to derive the basic heading PPPs for GFCF for the interim years when equipment good prices and construction prices are not surveyed. Basic heading PPPs for GFCF for the interim year t are obtained by taking the geometric average of the basic heading PPPs for year $t-1$ and $t+1$.²⁶ This ensures that the PPPs for t are base country invariant.

6.48. Eurostat calculates preliminary PPPs for a reference year twelve months after the year ends - that is, in the following December. This means that the prices collected for equipment goods and construction projects in $t+1$ must be validated and available by the end of September of $t+1$ if the interpolated PPPs for t are to be derived in time for their inclusion in the calculation. To facilitate this, the surveys of equipment good prices and construction prices are conducted in April and May of $t+1$.

- ¹ *System of National Accounts 1993*, Commission of the European Communities, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations, World Bank, 1993.
- ² *European System of Accounts 1995*, Eurostat, Luxembourg, 1996.
- ³ Without prices, PPPs cannot be calculated for these two expenditure categories. Instead, reference PPPs are used to obtain their real values. The reference PPPs used for change in inventories are the weighted averages of the PPPs for consumer goods and the PPPs for equipment goods. The reference PPPs used for acquisitions less disposals of valuables are the PPPs for jewellery, clocks and watches.
- ⁴ Comprising: plantation, orchard and vineyard development; change in stocks of breeding stock, draught animals, dairy cattle, animals raised for wool clippings, etc.; computer software that a producer expects to use in production for more than one year; land improvement including dams and dikes which are part of flood control and irrigation projects; mineral exploration; acquisition of entertainment, literary or artistic originals; other intangible fixed assets.
- ⁵ Some authors dispute this. Castles, for example, argues “if one country must put aside more of its current production than another to replace capital currently being consumed, then it has less available for its current needs and for increasing its capital stock. It follows that the aggregates which are appropriate for international comparisons of real income or product should make allowance for capital consumed in the process of production: Net Domestic Product is, in principle, a better measure than Gross Domestic Product of total income or product and Net Fixed Capital Formation (8% of Net Domestic Product for the OECD as a whole) is a better measure than Gross Fixed Capital Formation (20 % of Gross Domestic Product for the OECD as a whole) of the resources used to increase capital stock rather than meet current needs”. Paragraph 8.8, *Review of the OECD-Eurostat PPP Programme*, I. Castles, unpublished OECD document, STD/PPP(97)5, September 1997.
- ⁶ For this reason it is proposed that the ICP in the short term should concentrate on consumption and not attempt to calculate PPPs for GFCF. See *Evaluation of the International Comparison Programme*, E/CN.3/1999/8, November 1998.
- ⁷ Up until 2001, Eurostat surveyed equipment good prices and construction prices annually. Since 2001, Eurostat has carried out the price surveys every two years in order to make savings and reduce the overall cost of the Programme.
- ⁸ Since 1990, the OECD has surveyed equipment good prices and construction prices once every three years (previously it had been once every five years). When Eurostat conducted its surveys annually, co-ordination was not a concern. Now that Eurostat only collects prices every two years, it means that Eurostat and the OECD only conduct joint surveys once every six years.
- ⁹ The EU Candidate Countries – Bulgaria, Croatia, Romania and Turkey – and the EFTA countries – Iceland, Norway and Switzerland.
- ¹⁰ According to the SNA 93 and the ESA 95, when the ownership of an existing fixed asset, such as a used or second-hand equipment good, is transferred from one resident producer to another, the value of the asset transferred is to be recorded as negative GFCF for the seller and as positive GFCF for the purchaser. The value of the positive GFCF to be recorded for the purchaser will exceed the value of the negative GFCF to be recorded for the seller only by the value of the costs of ownership transfer incurred by both parties to the transaction. Over the whole economy, sales and purchases cancel each other out and only the costs of the transfer of ownership paid by both seller and purchaser are recorded as GFCF. (See paragraphs 10.39 to 10.43 in the SNA 93 for a more detailed description of the treatment of existing assets.)
- ¹¹ The exporting country records them as negative GFCF (and exports). A country can report a negative expenditure weight for one or more of its basic headings under GFCF because of this.
- ¹² The Quaranta editing procedure provides for each participating country a measure of the variation of its relative price level within a basic heading. See Annex IV.
- ¹³ When matching products and deciding whether or not the one observed is a close substitute to the one specified, it is not just the number of parameters not matching that needs to be taken into account, but also the degree to which they differ. Products with “near misses” on most, if not all, parameters could still be an acceptable substitute for the product specified.
- ¹⁴ In principle, if the pre-survey has been thorough, all products priced by a country would at least be equivalent. In practice, changes in the national market and/or modifications to the product specifications pre-surveyed, may result in a country pricing non-comparable products.
- ¹⁵ This approach is not followed by the OECD. Countries participating in OECD comparisons are expected to report prices that include the actual rate of non-deductible tax on products paid.
- ¹⁶ Countries participating in OECD comparisons report mid-year (July) prices. Countries participating in Eurostat comparisons also reported mid-year (July) prices when they surveyed equipment good prices annually. The change to April prices is explained in paragraph 6.48.
- ¹⁷ Make and model are included among the technical parameters compared.
- ¹⁸ Construction cost indices generally do not reflect the full range of factors that determine market prices – factors such as overhead costs, preliminary expenses, sub-contractors’ margins, prime contractor’s profit (or loss), architects’ and engineers’ fees and non-deductible taxes on products.
- ¹⁹ Construction “price” indices based on standard components or operations do not reflect all the factors that influence market prices. Although, for example, they include sub-contractors’ margins, they will not include prime contractor’s profit (or loss).
- ²⁰ For these and other variables that need to be taken into account when pricing a bill of quantities see *Construction Cost Data Workbook*, N. Sinclair, P. Artin and S. Mulford, unpublished paper presented at the Conference of the International Comparison Programme, World Bank, Washington, March 2002.
- ²¹ Eurostat introduced “reduced bills of quantities” during its 2001 survey of construction prices. The OECD introduced them in its 2002 survey. Prior to 2001, the bills of quantities priced for Eurostat-OECD comparisons listed all the elementary components required to complete the standard construction projects.
- ²² The pre-survey approach to updating product lists is not applicable to bills of quantities. A system of annual reviews is being put in place instead. Three bills of quantities – one residential building, one non-residential building and one civil engineering work – will be reviewed each year. Each bill of quantities will be examined by a taskforce comprising three participating countries with the object of modernising it. This may mean making changes to the existing bill, replacing the bill by another for the same construction project or providing a bill for a different construction project. The recommendations of the taskforces will be discussed by all participating countries at a meeting convened by Eurostat in the year between survey years.

- ²³ This approach is not followed by the OECD. Countries participating in OECD comparisons are expected to report prices that include the actual rate of non-deductible tax on products paid.
- ²⁴ Countries participating in OECD comparisons report mid-year (July) prices. Countries participating in Eurostat comparisons also reported mid-year (July) prices when they surveyed construction prices annually. The change to April prices is explained in paragraph 6.48.
- ²⁵ The edits described in this paragraph are under review. Instead of a top down approach, a bottom up approach is proposed. This will involve comparing the prices of elementary components first. It has the advantage, among others, of allowing editing to start before all countries have reported their prices. The use of the Quaranta editing procedure at the major component level is also being considered.
- ²⁶ PPPs and not prices are interpolated because the products priced in t-1 and in t+1 will not necessarily be the same.