

Producer price Indices – Comparative Methodological Analysis

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1 INTRODUCTION

1. Producer Price Indices (PPIs) serve two main functions. The first is to provide an indication of price change by producers of goods and services, and therefore as an indicator of inflationary pressure¹ on consumer price indices, (CPIs). Increasingly, given the increased tendency of global production processes, they can also serve as indicators of inflationary pressures in importing countries. The second reflects their role in deflating current price estimates of economic activity to arrive at measures of activity in constant prices.

2. Clearly, analysts have a keen interest in comparisons of PPIs between countries, and not just because increased producer prices in one country have the potential to spill over into PPIs or CPIs in another. But, despite this interest, little readily accessible source of information currently exists to inform users of the conceptual comparability of PPIs across countries.

3. This paper is an attempt to fill that gap. It attempts to provide a detailed exposition of differences in the scope and coverage of PPIs throughout OECD countries, with additional commentary on the primary uses of PPIs across countries (which is often an explanatory factor for underlying practical differences). It also provides a summary description of a number of issues relating to the practical construction of PPIs; where different approaches may also have an impact on cross-country comparability. A more comprehensive description of these latter issues is provided in the *Producer Price Index Manual*.²

4. The paper begins with a description of issues that arise in the context of international comparisons of PPIs in terms of scope and coverage (e.g. type of prices collected, classification used, treatment of export and weighting scheme). It then goes on to examine basic data and their collection methods (weights and their sources and sampling method) before considering compilation issues. In conclusion, most of these elements are set in regards within the internationally accepted statistical framework for PPIs.

¹ Stage of Processing Frameworks similarly try and indicate the potential for increased prices in one sector to spill over into another.

² *Producer Price Index Manual – Theory and Practice*, International Monetary Fund, Washington, D.C., 2004. Electronic version of the *Producer Price Index Manual* is available at the following address: <http://www.imf.org/external/np/sta/tegpipi/>; which replaces the United Nations publication, *Manual on Producers' Price Indices for Industrial Goods*.

2 BACKGROUND

5. There are two main types³ of PPI that are collected and published by most statistics institutes: output PPIs and input PPIs.

Output PPIs

6. The first (output PPI) relates to the measure that is designed to reflect the price indices of goods and services sold by producers. The underlying principle is that the index should measure the prices received by producers.

7. Output Price Indices are the target variable collected and published by the OECD⁴ (more detail on the data collected by the OECD is shown in annex 1). It's important to note that output PPIs include changes in the price of goods and services that may be sold abroad. Concerning the use of PPIs to deflate measures of output, the distinction between the changes in price of goods sold abroad and goods sold domestically is of little relevance but it matters where the PPI is used as a measure of potential (and domestic) inflation. As such, two types of Output PPIs are often compiled: the first measuring the changes in prices of goods and services sold domestically (domestic output PPI) and the second that capture changes in prices of goods and services sold to all consumers, irrespective of their location (total output PPI).

Input PPIs

8. Input PPIs, on the other hand, reflect changes in prices paid by producers for raw materials and intermediate goods. Like output PPIs, input PPIs exclude deductible taxes on products (e.g. VAT) but they include the retail or wholesale margins of the supplier, and so, reflect purchasers' prices; which include any transport charges paid separately by the purchaser.

Issues affecting comparability

9. Given the scope of data collected by the OECD, the focus of this paper is on the issues affecting the comparability of output PPIs. The following list provides an overview of the main issues that are described in more detail in the remainder of the paper:

- Scope and coverage:
 - ~ Type of prices
 - ~ Activity *versus* product
 - ~ Domestic *versus* export markets
 - ~ Gross output versus net sector weights
- Basic data:
 - ~ Weights and their sources
 - ~ Sample design and selection

³ There is also a third type, referred to as the value-added PPI, which is a weighted average of the input and output PPIs. Closely related to input PPIs are Wholesale Price Indices that reflect changes in the prices of intermediate and final consumption goods and services.

⁴ For further background information on PPIs published by the OECD since May 2009, see Annex 1 and <http://www.oecd.org/dataoecd/10/62/42958772.pdf>

- Index calculation
 - ~ Elementary aggregates
 - ~ Calculation of higher level indices
 - ~ Missing prices
 - ~ Changes in quality

10. One other issue that is of relevance here, albeit indirectly, concerns the use of PPIs in countries. As described above PPIs serve two distinct purposes – measures of inflation and deflators. In practice the primary use of PPIs can often dictate the way in which they are defined and constructed and it is important to keep this in mind.

3 SCOPE AND COVERAGE

3.1 Type of prices

11. In practice there exist two valuations for output PPIs, *basic prices* and *producer prices*. The 2008 SNA describes the valuations as follows:

The basic price is the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any tax payable, and plus any subsidy receivable, by the producer as a consequence of its production or sale. It excludes any transport charges invoiced separately by the producer

The producer's price is the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any VAT, or similar deductible tax, invoiced to the purchaser. It excludes any transport charges invoiced separately by the producer.

12. Somewhat confusingly, the 2008 SNA and the *Producer Price Index Manual* have a preference for valuations to be measured on the basis of *basic prices*, rather than *producer prices*, as basic prices better align with the cash that producers actually receive to compensate them for expenditures on goods and services used as intermediate inputs, for labour costs and as a return to capital. In this sense it's important to note that *Producer price* valuations include taxes on products paid, and exclude subsidies receivable, by the final purchaser.

13. The preceding paragraphs concisely describe the differences between the two measures vis-à-vis taxes and subsidies and transport charges but it is instructive to consider a couple of other issues that may impact on comparability of PPIs across countries (further information is available in the PPI Manual).

- *Discounts and rebates margin*: prices used should be actual transaction prices, not list prices, and therefore both *basic* and *producer prices* should include the impact of any discounts and rebates.
- *Export prices*: prices should be valued at the customs frontier of the exporting country, using the free on board price (f.o.b.); which includes freight and insurance charges incurred up to that point and any export duties or other taxes on exports levied by the exporting country.

14. [“Table 1: Type of prices”](#) gives an overview of the basis of prices collected in OECD Member countries. It shows that most countries value PPIs using *basic prices*. However, in some countries the measures used more closely follow *producer price valuations*, (e.g. Germany and Ireland, which include Excise duties), or indeed *purchaser price valuations*, (e.g. Israel which includes consumption taxes as does the Japanese Domestic Corporate Goods Price Index).

3.2 Activity versus Products

3.2.1 Activity classification

15. All OECD countries publish activity based PPIs that are published by the OECD at a higher level of aggregation, such as Manufacturing, Mining and Quarrying activities and also Total Industry.

16. It’s important to note that individual OECD Member countries collect information by activity using their own national activity classifications that reflect the structure of their own economies. This may cause some degree of incomparability across countries but typically, especially at the higher levels of aggregation, national classification systems are consistent with ISIC (or the equivalent European Union classification the *Statistical Classification of Economic Activities in the European Community (NACE)*⁵ which is consistent with ISIC Revision 4⁶).

17. In most countries, PPIs cover those activities that produce goods, such as Mining and quarrying (Category C of ISIC Rev. 3.1) and Manufacturing (Category D of ISIC Rev. 3.1) and sometimes Agriculture and Fishing (Category A-B of ISIC Rev. 3.1), Electricity, gas and water supply (Category E of ISIC Rev. 3.1), Construction (Category F of ISIC Rev. 3.1) and Transport, storage and communications (Category I of ISIC Rev. 3.1). Some OECD countries, however exclude a number of specific manufacturing activities where production is not significant in their country such as office and computing machinery, shipbuilding, aircraft manufacture and recycling.

3.2.2 Product classification

18. Many countries also publish product or commodity indices again using national classifications that are designed to categorize products by common characteristics. Unlike their activity counterparts, national product classifications are typically less consistent with the international standard, the Central Product Classification (CPC).

19. Three main frameworks are used by OECD member countries to publish product or commodity indices.

- The first presents PPIs by type of commodity or good based on similarities in end-use or material composition, disregarding industry of origin.
- The second (referred to PPI by *Stage of processing*) classifies goods and services according to their position in the production chain. Each commodity is allocated to only one stage of the

⁵ Council Regulation n°1165/98. For European Countries, the move from NACE Rev. 1 classification to NACE Rev. 2 classification was done in March 2009.

⁶ Except Australia and New-Zealand, non European-Union OECD countries used national classification which is consistent with ISIC Rev. 3.1. For practical reasons, we refer to ISIC Rev. 3.1 for non-European Union OECD countries and to NACE Rev. 2 for European Union OECD countries. For further information on the high level concordance between ISIC Rev.3.1 and ISIC Rev.4, see Annex 3.

chain even if it could, in practice, be used in other stages. Input-output tables form the basis for the categorization, whose stages are broadly defined as:

1. Primary products - Raw (or unprocessed) materials entering the market for the first time. They are not sold directly to final consumers;
2. Intermediate goods – Goods that have been processed but require further processing.
3. Final goods – Goods destined for final demand. This category is often split into consumer and investment goods and exports.

Non-European OECD countries (e.g. Canada, Japan, Korea and the United-States) give priority to this range of indices that are compiled for specific industries where possible.

- The third presents PPIs in a *Stage of production* framework following a transaction flow approach. Under this concept, flows of commodities are categorized according to their economic destination on a sequential basis along the chain of production. The Stage of production approach differs from the stage of processing approach in the sense that commodities can be included in more than one stage.
- The primary categorization differentiates between final demand commodities and non-final demand commodities which are further divided into two stages: preliminary and intermediate. In summary, three stages are considered – Preliminary, Intermediate and Final – that are not aggregated to avoid multiple counting. These types of indices are computed on a regular basis in Australia.

20. “[Table 2: Activity vs. Product](#)” provides information on the activity and product classifications used in OECD countries, as well as information on the scope of activities covered and commodity framework used in each country.

21. It’s important to note that there is a clear pattern of differences in practices between European and non-European countries in term of classification and framework used to publish product or commodity indices.

- Except Australia and New-Zealand, non-European OECD countries have not yet moved to national classifications that are consistent with ISIC Rev. 4. PPIs for Iceland and Turkey follow NACE Rev.1 and other non-European OECD countries use national classifications consistent with ISIC Rev. 3.1.
- All OECD countries produce PPIs by Industry or Economic activity but with some differences in coverage (e.g. Israel covers only Mining & Quarrying and Manufacturing Industries whereas Japan, Korea and Mexico also include Agriculture, forestry and fishing).
- Non-European OECD countries give priority to PPIs by stage of processing or production rather than to PPIs by type of goods. Canada, Japan, Korea and the United-States publish PPIs by stage of processing that are compiled for specific industries where possible. Australia publishes PPIs by stage of production.

3.3 Domestic versus export market

22. A significant number of countries produce separate PPIs for goods and services sold to domestic consumers and those that include exports.

23. “[Table 3: Domestic vs. Export](#)” shows this information.⁷ It shows that in four OECD Member countries, PPIs cover prices that are charged in domestic markets only, i.e. export prices are not included whereas five OECD Member countries publish PPIs for total output only.

3.4 Gross Output versus net sector weights

24. Two approaches can be used to weight individual PPIs to form a higher aggregate, referred to here as gross and net sector weights. For a given activity gross output weights are simply the total deliveries or sales of each product in that sector to all consumers; whether final or intermediate consumption. Net sector weights, however, are based on the value of sales to establishments outside of the industry or group of industries in question (inter-industry sales only).

25. The impact on the PPIs from using either gross or net weights depends on the level of aggregation being considered in the industrial classification and on the extent of intra-industry transactions. Obviously gross weights will always be larger for a particular industry heading but to a varying degree across industries depending in particular on the degree of horizontal or vertical integration within each industry heading. Industries where horizontal or vertical integration is increasing within the industry heading will show declining gross weights but constant net weights. Net weights will also decline where the integration results in reclassification of units to other industry headings, but the size of this effect will obviously depend on the levels of aggregation. The differences between gross and net weights will become larger at successively higher levels of aggregation.

26. Gross output indices are needed for deflation of the total output of industries, which by definition is on a gross basis. However, aggregation of industry or group indices using gross weights will result in some, albeit implicit, degree of double-counting i.e., the higher the number of transactions (stages of production) involved in the production of a finished good, the higher the effective contribution of a given raw material say, used in production.

27. To overcome the ‘double-counting’ problem, net sector weights should be used in the compilation of higher level aggregates; and certainly if the indices are used to analyse how inflationary pressures are transmitted from one sector to another. Ideally, stage of processing indices should also be compiled using net sector weights. However, the use of net weights for compiling aggregate indices for inflation monitoring and stage of processing indices needs detailed input-output tables; which implies an extra layer of complexity in the construction of PPIs. Although many countries have relatively detailed tables only United-Kingdom⁸ and the United-States compile Industry PPIs on a net weights basis.

⁷ The OECD doesn’t publish PPIs for export market separately. When countries publish separate PPI for export prices, see national sources or Eurostat for EU countries.

⁸ For United-kingdom, PPIs published by the OECD are on a gross weights basis. Net sector output prices are available on the ONS website.

4 BASIC DATA

4.1 Weights and their sources⁹

28. The weights are key elements in the construction of PPIs in order to determine the impact that a particular price change will have on the overall index. They reflect the importance of each product priced in terms of its share in total output of the establishment.

29. In almost all countries the first stage of index aggregation results in product indices, which are then aggregated further to give both higher level product indices and/or industry (activity) indices.

30. At the first stage of elementary aggregation, individual prices are combined and, where possible, each price should be weighted by the value of production which it represents (micro-weights). In other words if several establishments (X, Y, Z) produce product A, the weight given to the price of product A produced by establishment X, $P_{X,A}$ should correspond to the share of establishment X's production of A in the economy. Where more than one price (i, j, k) for product A is collected from a single establishment, the prices should be weighted using the relative production values of the establishment for the different transaction specifications i, j, k. Thus, it is important to have output data at a detailed product level for all establishments in the PPI sample.

31. These detailed level product indices are then weighted together to give higher level product indices using the values of production of the detailed products for the economy as a whole (macro-weights). Industry indices are obtained by weighting together the product indices relevant to each industry, using the values of output of the different products for that industry, not only the establishments in the sample. Ideally, account should be taken of secondary products when compiling industry PPIs, i.e., detailed product indices covering both the principal and the secondary activities (products) should be combined to give industry PPIs with the same coverage as the industry output which the PPIs may be used to deflate.

32. It is usually recommended that weights be updated at least every five years, although the ideal frequency depends on the extent to which industrial structures change and on relative price movements. Indeed, there may be pressure from national accountants to update weights on an annual basis to facilitate annual chain-linking of constant price estimates.

33. "[Table 4: Weights and their sources](#)" provides details on the sources of weighting data, the current weight reference year and the frequency of weight update for OECD countries. The weights used in these indices relate to a range of years from 1993-94 to 2009, with 2005 the most common year (16 of the 34 OECD member countries). The weights are updated every 5 years in 17 countries and annually in 10 countries.

4.2 Sample design and selection (establishments and products)¹⁰

34. The approach countries use to design samples and select units for survey is to some extent driven by the objectives of the PPI.

⁹ More comprehensive information could be found in the *PPI Manual* Chapter 4 –Weights and their sources.

¹⁰ Further information could be found in the *PPI Manual*, Chapter 5.

35. If deflation is the main objective, priority in the sample design is usually given to detailed industry and product indices. On the other hand, if inflation indicators have priority, a greater emphasis will be placed on aggregate indices and reliable product samples should be compiled and then aggregated to yield industry PPIs whose reliability may be less accurate.

36. Sample design requires a consideration of the following issues:

- Sampling techniques (probabilistic / non-probabilistic);
- Sampling frames;
- Sample structures and stratification;
- Sample allocation between strata and,
- Methods for reducing non-sampling errors.

37. The selection of the observation units and/or products can be done using four types of sampling techniques: non-probabilistic, probabilistic, cutoff sampling and stratification (see Box 1).

Box 1. Sampling techniques

Non-probability sampling is known as judgmental or purposive sampling, or expert choice, and samples are chosen by experts to be representative” (PPI manual, 106). Judgmental sampling may be justified when sample sizes are small, but the samples are subject to biases. However, in practice the non-probabilistic methods are frequently used by the statistical agencies.

“In the context of PPIs, **probability sampling** means the selection of a sample panel of producers and products (transactions) from a universe of industrial activity in which each producer and product has a known chance of selection” (PPI manual, 106).

Although there are two main advantages to using a probability sample as opposed to a non-probability sample, namely an impartial selection of the items to be priced and the possibility of measuring the variance or sampling error, there are occasions where it is not necessary. This is particularly the case for price indices where the potential diversity of the change in prices charged by various producers of a given commodity over many time periods is relatively low. Moreover, in many countries, the range of domestically produced mining and manufacturing goods is so limited, and the number of producers so small, that a census rather than a survey should be used.

Different variants of probability sampling can be used, as described in the PPI Manual: *Simple random sampling*, *Systematic sampling* and the *PPS methods* (Probability Proportional to Size).

Cutoff sampling is another strategy which is frequently used by countries to select samples. In this approach, a predetermined threshold is established under which all the units (observation units or products) are excluded from the survey. Cutoff sampling has some practical appeal in selecting the industries and products in a multistage sampling scheme. However, there are drawbacks, in particular relating to the risk of biased estimates.

Stratified samples are often based on size criteria (number of employees or the value of the turnover).

38. The PPI Manual provides a fuller description of sampling issues. In summary, however, the sampling frame from which the sample is drawn should ideally reflect “a complete list of eligible units (producing and exporting) within the geographic and industry or product coverage required”. (PPI Manual, 109)

39. The sample structure depends on whether priority is given to PPIs by activity or product. If the focus is on activities, the first step requires the selection and classification of establishments by four-digit ISIC heading based on their principal activity (from which a sample of establishments is drawn). The second step selects products for each of the establishments, weighted accordingly to give Industry PPIs. Product PPIs are constructed in a similar way except that the products are identified at the first stage and activities in the second.

40. “[Table 5: Sampling method](#)” shows information relating to the sampling methods used for product and establishment selection and, and those selected first when information is available. Most OECD Member countries use non probability or cutoff sampling whilst seven used probability sampling.

5 COMPILATION ISSUES

41. The basic principles of index calculation – elementary aggregation, higher index aggregation, alignment of expenditure and price reference base, and chaining re-weighted indices – are the same for PPIs and CPIs.¹¹ But weighting and aggregation systems may be considerably more complex for PPIs than CPIs due to the different coverage of product and industry (activity) indices, and the conceptual preference for net sector weighting.

42. The compilation of a PPI consists of two main stages: 1) the calculation of price indices for elementary aggregates and, 2) the aggregation of these elementary price indices for higher level aggregates.

5.1 Elementary aggregates

43. Three main aggregation methods are used to calculate elementary aggregates:

- The ratio of un-weighted arithmetic mean of prices or **Dutot index**. This is often referred to as the ratio of averages (RA). The average price of a sample of observations in the current period is compared to the average price of the same sample of products in the previous (or base) period (matched samples). RA methods are not suitable if the spread of prices being aggregated indicates significant heterogeneity in observations;
- The un-weighted arithmetic mean of price relatives or **Carli index**. This is often referred to as the average of relatives (AR) and is based on comparisons of each individual price with its corresponding price in the previous (or base) period to give a price relative for each observation;
- The un-weighted geometric mean of the price relative which is identical to the ratio of the un-weighted geometric mean of prices (GM) or **Jevons index**; which is receiving increasing take-up in official statistics. The approach is to calculate a GM of prices in both periods and then derive the price relative or, alternatively, calculate a geometric average of the price relatives - both calculations will yield the same results. The GM assumes an elasticity of substitution between products of one.

5.2 Calculation of higher level indices

44. The second stage in the compilation process is the aggregation of elementary price indices to higher level indices.

45. This aggregation is typically done using a Laspeyres type approach, either:

¹¹ More comprehensive information could be found in the *PPI Manual*, Chapter 9.

4. The standard Laspeyres formula: the price in the current period is directly compared with the price in the period that weights are based;
5. The modified Laspeyres formula: the price in the current period is directly compared with the price in the previous period and indirectly compared with the price in the period weights are based.

46. Depending on the frequency of updating the (macro-) weights, PPIs are distinguished by fixed base indices or chained indices. The weights of fixed base indices are commonly updated every five years while the weights of chained indices are updated once a year. In most OECD countries fixed base indices are used but increasingly countries are moving toward chain-linked estimates.

47. “[Table 6: Index calculation](#)” shows information on the methods used for index calculation both for elementary aggregates and higher level aggregation. All OECD Member countries use a Laspeyres formula for their published PPIs of which ten countries produce chain-linked indices. Among the European countries, Italy adopted a chained PPI in March 2010 and United Kingdom is expected to move towards chained indices in the short term.

5.3 Missing prices¹²

48. The collection of data requires monthly repeated, well-identified products with observable transactions with the same quality. In practice, however, these conditions are not always satisfied, for example, where the price of a product in a particular period is missing whether permanently or temporarily. These two types of missing prices require different treatment as describe below.

49. Prices may be temporarily missing because of some collection difficulty or indeed because of the seasonality of products.¹³ When prices are temporarily missing, four types of corrective action lend themselves:

1. Omit the product;
2. Carry forward the last observed price;
3. Impute the missing prices using the average price change for the prices that are available in the elementary aggregates;
4. Impute the missing prices using the price change for a particular comparable product from a similar establishment.

50. If prices have permanently disappeared a replacement product should ideally be selected. In such situations replacement varieties should be selected and introduced into the sample, with great care being taken to identify any differences in quality between the original and replacement product. If there is a tangible quality difference between the two products this must be corrected for to ensure that the difference in quality does not enter as a price effect.

51. “[Table 7 - Missing prices](#)” presents information among OECD countries on the treatment of missing prices. Imputation of the missing prices is the preferred method used in most OECD countries.

¹² More comprehensive information could be found in the *PPI Manual*, Chapter 9, § B5.

¹³ The treatment of seasonal products in the computation of PPIs requires a specific treatment that we will not deal here with details. Further information could be found in the *PPI Manual* Chapter 22.

5.4 Change in quality¹⁴

52. Ideally, the index should not be affected either by changes in quality or changes in the sale conditions. Although it is not always possible to achieve this objective, the following procedures are useful in trying to separately identify pure price movements. Quality adjustment techniques can be broadly categorized into two types: explicit and implicit.

53. Four types of explicit methods are used by National Statistical Offices:

- *Expert judgment*: the estimate of the quality difference is done by an expert or a panel of experts that have both market and product knowledge. The PPI manual recommends this approach for highly complex products where alternative methods are not feasible;
- *Quantity adjustment* is used when the replacement is available albeit in different quantities. Quality adjustment is performed in this instance by scaling the price of the old or new product by the ratio of quantities between the replacement and old product;
- *Production and option costs*: quality adjustment is made by valuing the price of additional features in the new product;
- *Hedonic Approaches*.

54. Five types of implicit quality adjustment are used in practice:

- *Comparable* replacement is used when it is assumed there is no difference in price attributable to quality change;
- *Overlap pricing* is used when all of the price difference between the old and new product is assumed to reflect changes in quality and both products have been on the market in parallel for a certain time;
- *Linked to show no change* is similar to of the overlap pricing method, except here the old and new products are not available on the market at the same time;
- *Imputed prices* (overall, targeted or class mean imputation) are used when no replacement and no information is available to estimate the effect on prices of quality changes. The price change of similar products is assumed to be the same as that for the missing products;
- In the case where no replacement is available the price of the old product could also be *carried forward*.¹⁵

55. In a simplistic way, the use of the explicit or implicit methods is based on two key elements: the explicit quantification (or not) of the quality difference and the availability (or not) of a replacement product.¹⁶ See table 8 below.

¹⁴ More comprehensive information could be found in the *PPI Manual* Chapter 7.

¹⁵ All the quality adjustment methods are discussed in the *PPI Manual* – Chapter 7, pages 140 to 196.

¹⁶ See *PPI Manual*, Figure 7.3 - Flowchart for Making Decisions on Quality Change.

Box 2. Explicit versus quality adjustments			
		Can the quality difference be explicitly quantified?	
		No	Yes
Is a replacement available?	Yes	Comparable replacement	Explicit method
		Overlap pricing	
	No	Linked to show no change	
		Imputed prices	
Carry-forward			

56. “[Table 8: Quality adjustment](#)” shows information on the methodology used for the treatment of quality changes across OECD Member countries. The diversity of techniques applied by any one country in treating quality changes for the various goods priced for PPIs prevents direct comparison of each methodology actually used. The synthesis of methods shown in the table is, therefore, restricted to determining whether or not any adjustments are undertaken and to outlining the main methodologies used.

6 CONCLUSION

57. PPI statistics practices among OECD member countries are subject to many differences in the scope and coverage and also in their practical construction. This variety of approaches may have an impact on cross-country comparability and it is essential to keep this in mind.

58. However, at the same time, it’s important to recognise the significant effort and improvements made by Statistical Offices to improve producer price statistics in recent years. As shown in “[Table 9: Summary](#)”, OECD member countries produce PPIs that are increasingly in line with existing international statistical guidelines and recommendations¹⁷:

- Valuation: market output is valued at basic prices or producer prices with a preference for basic prices;
- Classifications should be in broad conformity with international recommended systems: ISIC, NACE;
- Domestic vs. Export: Total economy PPIs should be constructed for deflators of gross output and Domestic PPIs for measures of potential domestic inflation;
- Computation of lowest level indices: an unbiased formula should be used with a preference for ratio of the arithmetic mean of prices (RA) or geometric mean (GM);
- Aggregation formula with a preference for chained Laspeyres indices;
- The weight reference period should be updated preferably on an annual basis;

¹⁷ See [Data Quality Assessment Framework \(DQAF\) for the PPI](#), IMF, July 2003.

- When prices are temporarily missing, imputations should be based on the price change of similar products;
- Quality changes are correctly measured.

Table 1: Type of prices

Country	Type of prices	VAT or Deductible tax on products	Other taxes on products	Subsidies on products	Rebates and discounts	Transport and insurance charges	Export prices
Australia	Basic prices	Excluded	Excluded	Included	Included	Excluded	f.o.b.
Austria	Basic prices	Excluded	Excluded	Included	Included	Excluded	f.o.b.
Belgium	..	..	..	..	..	..	..
Canada	..	Excluded	Excluded	..	Included	Excluded	f.o.b.
Chile	Basic prices	Excluded	Excluded	Included	Included	Excluded	..
Czech Republic	..	Excluded	Excluded	..	..	Excluded	f.o.b.
Denmark	Basic prices	Excluded	Excluded	Included	Included	Excluded	f.o.b.
Estonia	Basic prices	Excluded	Excluded	Included	Included	Excluded	f.o.b.
Finland	..	Excluded	Excluded	..	..	Excluded	f.o.b.
France	Basic prices	Excluded	Excluded	Included	Included	Excluded	f.o.b.
Germany	Producer prices	Excluded	Excise duties included	..	..	Excluded	f.o.b.
Greece	Basic prices	Excluded	Excluded	Included	Included	Excluded	f.o.b.
Hungary	Basic prices	Excluded	Excluded	Included	Included	Excluded	f.o.b.
Iceland	Basic prices	Excluded	Excluded	Included	Included	Excluded	f.o.b.
Ireland	Producer prices	Excluded	Excise duties included	Included	Included	Excluded	..
Israel	Purchaser prices	Included	Included	Included	Included	Excluded	..
Italy	Basic prices	Excluded	Excluded	Included	Included	Excluded	..
Japan	Purchaser prices	Included	Included	..	Included	Excluded	f.o.b.
Korea	..	Excluded	Indirect taxes included	..	Included	Excluded	f.o.b.
Luxembourg	Producer prices	Excluded	Special taxes partly included	Included	Included	Excluded	f.o.b.
Mexico	..	Excluded	Excluded	..	Included	Excluded	..
Netherlands	Basic prices	Excluded	Excluded	Included	Included	Excluded	f.o.b.
New Zealand	Basic prices	Excluded	Excluded	Included	Included	Excluded	f.o.b.
Norway	Basic prices	Excluded	Excluded	Included	Included	Excluded	f.o.b.
Poland	Basic prices	Excluded	Excluded	Included	Included	Excluded	f.o.b.
Portugal	Basic prices	Excluded	Included	Included	Included	Excluded	..
Slovak Republic	..	Excluded	Excluded	..	..	Excluded	f.o.b.
Slovenia	Basic prices	Excluded	Excluded	Included	Included	Excluded	f.o.b.
Spain	Basic prices	Excluded	Excluded	Included	Included	Excluded	f.o.b.
Sweden	Basic prices	Excluded	Excluded	Included	Included	Excluded	f.o.b.
Switzerland	Basic prices	Excluded	Excluded	Included	Included	Excluded	f.o.b.
Turkey	..	Excluded	Excluded	..	Included	Excluded	..
United Kingdom	Basic prices	Excluded	Excluded	Included	Included	Excluded	f.o.b.
United States	..	..	Excluded	..	Included	Excluded	f.o.b.

Table 2: Activity vs. product

Country	Activity Classification	Activities covered	Product classification	Commodity framework
Australia	ANZSIC 2006 (corresponds to ISIC Rev. 4 at 4-digit level)	Economic Activity: Manufacturing (C) SOP1 (ANZSIC 1993): Agriculture, forestry and fishing (A), Mining (B), Manufacturing (C), Electricity, gas and water supply (D), Construction (E), Accommodation, cafes & restaurants (H), Transport and storage (I) and Property and business services (L)	Australian Input-Output Product Classification	Stage of Production
Austria	NACE Rev. 2	Mining and carrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D) and Water supply, sewerage, waste management and remediation activities (E)	ÖPRODCOM (Austrian version of product list PRODCOM) with the first six digits corresponding to the CPA	Type of good
Belgium	NACE Rev. 2	Mining and carrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D) and Water supply, sewerage, waste management and remediation activities (E)	CPA 2008	Type of good
Canada	NAICS (broadly corresponds to ISIC Rev. 3.1 at 2-digit level)	Manufacturing	Canadian Principal Commodity Group Aggregates (PCGAs)	Commodity Stage of Processing
Chile	ISIC Rev. 3	Agriculture, hunting and forestry (A), Fishing (B), Mining and carrying (C), Manufacturing (D), Electricity, gas and water supply (E)	CPC Ver.1	..
Czech Republic	NACE Rev. 2	Mining and carrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D) and Water supply, sewerage, waste management and remediation activities (E)	CZ - CPA 2008	Type of good
Denmark	NACE Rev. 2	Mining and carrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D) and Water supply, sewerage, waste management and remediation activities (E)	World Customs Organisation's Harmonised System (HS)	Type of good
Estonia	NACE Rev. 2	Mining and carrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D) and Water supply, sewerage, waste management and remediation activities (E)	PRODCOM / CPA 2008	Type of good
Finland	NACE Rev. 2	Mining and carrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D) and Water supply, sewerage, waste management and remediation activities (E)	CPA 2008	Type of good
France	NACE Rev. 2	Mining and carrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D) and Water supply, sewerage, waste management and remediation activities (E)	CPA 2008	Type of good
Germany	NACE Rev. 2	Mining and carrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D) and Water supply, sewerage, waste management and remediation activities (E)	German commodity classification of production statistics, version 2009 (GP 2009), based on CPA and PRODCOM	Type of good

Table 2: Activity vs. product (cont'd)

Country	Activity Classification	Activities covered	Product classification	Commodity framework
Greece	NACE Rev. 2	Mining and carrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D) and Water supply, sewerage, waste management and remediation activities (E)	CPA 2008	Type of good
Hungary	NACE Rev. 2	Mining and carrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D) and Water supply, sewerage, waste management and remediation activities (E)	Industrial Product classification (Consistent with CPA 2008 at 6-digit level)	Type of good
Iceland	NACE Rev. 1	Other Mining and Quarrying (C14) and Manufacturing (D)	ProdCom	..
Ireland	NACE Rev. 2	Mining and carrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D) and Water supply, sewerage, waste management and remediation activities (E)	CPA 2008	Type of good
Israel	Standard Industrial Classification of all Economic Activities (1993), broadly corresponds to ISIC Rev. 3.1	Mining & Quarrying (C) and Manufacturing (D)	..	..
Italy	NACE Rev. 2	Mining and carrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D) and Water supply, sewerage, waste management and remediation activities (E)	ProdCom	Type of good
Japan	Japan Standard Industrial Classification (JSIC) based on ISIC Rev. 3.1	Manufacturing industry products, Agriculture, forestry, & fishery products, Minerals, Electric power, gas & water, and Scrap & waste	JSIC at the four-digit level and the commodity classification in the Census of Manufacturers (CM)	Stage of Processing
Korea	KSIC 2007	Agriculture, forestry and fishing; mining, manufacturing; electricity, gas and water; transportation, storage and communication, financial intermediation, insurance, real estate rental and business services	..	Stage of Processing
Luxembourg	NACE Rev. 2	Mining and carrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D) and Water supply, sewerage, waste management and remediation activities (E)	ProdCom	Type of good
Mexico	Mexican Catalogue of Economic Activities (CMAE-99)	Agricultural, forestry and fishing, Mining and Quarrying, Manufacturing, Construction activities, Electricity and gas (includes water), Restaurants and hotels, Transport and communications and Communal, social and personal Services	End-use data available	..

Table 2: Activity vs. product (cont'd)

Country	Activity Classification	Activities covered	Product classification	Commodity framework
New Zealand	ANZSIC 2006 (corresponds to ISIC Rev. 4 at 4-digit level)	All industries	..	Commodity
Norway	NACE Rev. 2	Mining and carrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D) and Water supply, sewerage, waste management and remediation activities (E)	CPA 2008	Type of good
Poland	NACE Rev. 2	Mining and carrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D) and Water supply, sewerage, waste management and remediation activities (E)	ProdCom / CPA	Type of good
Portugal	NACE Rev. 2	Mining and carrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D) and Water supply, sewerage, waste management and remediation activities (E)	ProdCom / CPA	Type of good
Slovak Republic	NACE Rev. 2	Mining and carrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D) and Water supply, sewerage, waste management and remediation activities (E)	ProdCom / CPA	Type of good
Slovenia	NACE Rev. 2	Mining and carrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D) and Water supply, sewerage, waste management and remediation activities (E)	ProdCom	Type of good
Spain	NACE Rev. 2	Mining and carrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D) and Water supply, sewerage, waste management and remediation activities (E)	ProdCom	Type of good
Sweden	NACE Rev. 2	Mining and carrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D) and Water supply, sewerage, waste management and remediation activities (E)	CPA 2008	Type of good
Switzerland	NACE Rev. 2	Agriculture (A), Mining and carrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D) and Water supply, sewerage, waste management and remediation activities (E)	CPA 2008	Type of good
Turkey	NACE Rev. 1	Agriculture, Hunting and Forestry (A), Fishing (B), Mining and Stone Quarrying (C), Manufacturing (D) and Energy (E)	..	..
United Kingdom	NACE Rev. 2	Mining and carrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D) and Water supply, sewerage, waste management and remediation activities (E)	ProdCom	Type of good
United States	NAICS (broadly corresponds to ISIC Rev. 3.1 at 2-digit level)	Mining, Utility, and Manufacturing Sectors, many Service Industries, and some Construction Industries	North American Product Classification System (NAPCS Ver.1)	Commodity Stage of Processing

Table 3: Domestic vs. export

Country	Domestic	Export	Total
Australia	Stage of production only	..	×
Austria	×	×	×
Belgium	×	×	×
Canada	..	..	×
Chile	..	..	×
Czech Republic	×	×	×
Denmark	×	×	×
Estonia	×	×	×
Finland	×	×	×
France	×	×	×
Germany	×	×	×
Greece	×	×	×
Hungary	×	×	×
Iceland	..	..	×
Ireland	×	×	×
Israel	×	..	..
Italy	×	×	×
Japan	×	..	Commodities and Stage of processing only
Korea	×	..	Stage of processing only
Luxembourg	×	×	×
Mexico	×	..	..
Netherlands	×	×	×
New Zealand	..	..	×
Norway	×	..	×
Poland	×	×	×
Portugal	×	..	..
Slovak Republic	×	×	×
Slovenia	×	×	×
Spain	×	×	×
Sweden	×	×	×
Switzerland	×	×	×
Turkey	×	..	..
United Kingdom	×	×	×
United States	..	..	×

Table 4: Weights and their sources

Country	Sources	Current weight reference year	Frequency of weight updates
Australia	Input-Output Tables	Output prices: 2001-02 SOP: 1998-99	Annually
Austria	Weights are based on the value of production sold Micro-weights are based on the PRODCOM survey at 10-digit level Macro-weights for CPA 6-digit headings and higher aggregates are from the I/O Tables	Y-3	Annually
Belgium	..	..	..
Canada	Input-Output Tables	1997	Every 5 years
Chile	Annual Industry Survey	2002	10 years
Czech Republic	Annual domestic sales	Calendar year 2005	Every 5 years
Denmark	National Accounts	Calendar year 2005	Every 5 years
Estonia	Annual survey ("Prodcom")	y-2	Annually
Finland	Weight structure of the indices is based on the Euro values of domestic production, exports and imports in 2005 Weights are derived from National Accounts, Board of Customs Foreign Trade Statistics and Statistics on Industrial Production	Calendar year 2005	Change as required
France	National Accounts	Calendar year 2005	Every 5 years
Germany	Turnover statistics Production statistics	Calendar year 2005	Every 5 years
Greece	Surveys on industry and external trade	2005	Every 5 years
Hungary	Weights are based on the annual sales of industrial products and services Annual Industry Survey	Y-2	Annually
Iceland	Annual Census of Industrial Production (PRODCOM census)	Y-1	Annually
Ireland	Census of Industrial Production (CIP) for the base year (2005)	Calendar year 2005	Every 5 years
Israel	Weights for the upper level divisions and groups are based on Annual Industrial Survey Weights for lower level of groups and classes are set separately based on a special survey of detail products sales information collected from a sample of establishments and enterprises	Weights 2004/2005 evaluated at 2005 prices of the base period.	Every 5 to 10 years At lower level of aggregation (groups and classes) weights are updated more frequently
Italy	Structural Business Statistics (Annual enterprises accounts and Prodcom) and the Italian business registers (ASIA)	Y-1	Annually

Table 4: Weights and their sources (cont'd)

Country	Sources	Current weight reference year	Frequency of weight updates
Japan	Weights are based on the value of shipments to the domestic market (which are obtained by deducting the export value of 2005 in the MOF's Trade Statistics of Japan from total shipments of 2005 in the Census of Manufacturers) As for the weights which cannot be calculated from the above sources (such as non-manufacturing products), other statistics published by government ministries or industry organizations accordingly are used	Calendar year 2005	Every 5 years
Korea	Weight for each commodity or service represents its shipment (or output) value expressed relative to the total value of the universe (903 trillion won) Commodity weights are based on shipment values and service weights are based on output values for domestic use The shipment value of commodities are based on the Statistical Yearbook of the Ministry of Agriculture, Forestry and Fishery and the Report of Mining and Manufacturing Survey of 2005 published by the National Statistical Office	Calendar year 2005	Every 5 years
Luxembourg	Weights are the enterprises turnover in the base year splitted down by products and destinations of the sold production The turnover comes from the Structural Business Surveys	2005	Every 5 years
Mexico	National Accounts	2003	Not defined
Netherlands	National Accounts At a detail level ProdCom statistics and Trade statistics	Calendar year 2005	Every 5 years
New Zealand	Annual Enterprise Survey (AES) Commodity Data Collection Survey (CDC)	March 2008 quarter	5-10 years
Norway	Annual Industrial Survey Export declarations National Accounts	Y-1	Annually
Poland	Weights are derived from the annual sold production net-data Annual Industrial Survey, which covers in the sections B, C, D and E of NACE Rev.2 all enterprises with 50 and more employees and sample (10 percent) of enterprises with 10-49 employees For the current weighting (while computing price indices in the current month to the previous one) monthly sold production net-data are obtained from both the price survey and the industrial survey are used	2005	Every 5 years

Table 4: Weights and their sources (cont'd)

Country	Sources	Current weight reference year	Frequency of weight updates
Portugal	Annual Industrial Survey Business registers	2005	Every 5 years
Slovak Republic	The weighting structure at the 4-digit SK NACE Rev. 2 level was determined on the base of 2005 sales according to industry statistics (covering establishments with 20 employees or more) Below this level, Weights were based on the results of a "One-time Survey for the Purpose of Selection of Representatives for Observation of Price Developments of Individual Producers" that involved 1000 respondents	Calendar year 2005	Every 5 years
Slovenia	Annual Industrial Survey	y-2	Annually
Spain	Weights have been calculated in accordance with the importance of the branches of activity and of products in the year 2005, taking the structural information for the sector industrial Annual Industrial Companies Survey (ICS) Industrial Products Survey (IPS)	2005	Every 5 years
Sweden	Annual industrial survey	Value weights based on y-2 quantities at December y-1 prices (y = current year)	Annually
Switzerland	Gross production value or turnover	Calendar year 2008	Every 5 years
Turkey	Weights are based on the Industrial production data and Agricultural, Mining and Energy censuses of 2005	Calendar year 2007	Annually
United Kingdom	Weights are based on the sales data Annual Product Sales Inquiry (PRODCOM), which covers all manufacturing establishments above a certain employment, and a sample of those below the threshold. The employment threshold varies by industry	2005	Every 5 years
United States	Weights are based on values of shipments 1997 Economic Censuses	2002	Every 5 years

Table 5: Sampling method

Country	Product selection	Establishment selection	First selected
Australia	Judgmental sampling		..
Austria	Cutoff sampling		..
Belgium	..	..	..
Canada	Probability sampling		..
Chile	Probability sampling		..
Czech Republic	Judgmental sampling		..
Denmark	..	..	Establishment
Estonia	Probability sampling		
Finland	Cutoff sampling	Stratified samples	Product
France	Judgmental sampling	Cutoff sampling Cutoff criterion is 70% of the total turnover of the sold production of the enterprise	Establishment
Germany	Cutoff sampling Cutoff criterion is 60% of a NACE class	Judgmental sampling	..
Greece	Cutoff sampling		..
Hungary	Judgmental sampling	Judgmental sampling	Product
Iceland	Selected in cooperation with each enterprise	Judgmental sampling	Establishment
Ireland	Judgmental sampling		..
Israel	..	Cutoff sampling Judgmental sampling	Establishment
Italy	Cutoff sampling		..
Japan	..	Judgmental sampling	..
Korea	Cutoff sampling		..
Luxembourg	Judgmental sampling	Judgmental sampling	Establishment
Mexico	Judgmental sampling Random sampling	Large establishments are first selected Other establishments are selected by using Probability Proportionate to Size Sampling	..
Netherlands	Probability Proportional to Size		..
New Zealand	Judgmental sampling		..
Norway	Judgmental sampling Cutoff sampling Stratified sampling		..
Poland	Judgmental sampling		..
Portugal	Cutoff sampling		..
Slovak Republic	Judgmental sampling	Judgmental sampling	Establishment
Slovenia	Cutoff sampling		..
Spain	..	..	Establishment
Sweden	Probability Proportional to Size		..
Switzerland	Judgmental sampling	Judgmental sampling	Establishment
Turkey	Cutoff sampling		..
United Kingdom	Proportional random sampling Judgmental sampling	Stratified samples Proportional random sampling Judgmental sampling	..
United States	Probability Proportional to Size		..

Table 6: Index calculation

Country	Computation of lowest level indices			Aggregation formula	Reference period
Australia	Laspeyres index	Weighted arithmetic mean of long term price relatives	Direct elementary index	Modified Laspeyres	Manufacturing Industry: 1989-90=1,000 Food products manufacturing: 2001-02=1,000 Stage of Production: 1998-99=1,000
Austria	Jevons index	Unweighted geometric average of price relatives	..	Chained Laspeyres	2005=100
Belgium	..	..	..	..	2005=100
Canada	Laspeyres index	Ratio of the weighted arithmetic mean of prices	Chain elementary index	Fixed base Laspeyres	2002=100
Chile	Jevons index	Ratios of the unweighted geometric mean of prices	..	Fixed base Laspeyres	April 2003=100
Czech Republic	Laspeyres index	Weighted arithmetic mean of price relatives	Direct elementary index	Modified Laspeyres	2005=100
Denmark	Geometric Laspyeres index	Weighted geometric mean of the price relatives	..	Fixed base Laspeyres	2005=100
Estonia	Dutot index	Ratio of the unweighted arithmetic mean of prices	..	Chained Laspeyres	2005=100
Finland	Jevons index	Unweighted geometric mean of the price relatives	Direct elementary index	Fixed base Laspeyres	2005=100
France	Laspeyres index	Weighted arithmetic mean of the price relatives	Chain elementary index	Fixed base Laspeyres	2005=100
Germany	Laspeyres index	Weighted arithmetic mean of the price relatives	..	Modified Laspeyres	2005=100

Table 6: Index calculation (cont'd)

Country	Computation of lowest level indices			Aggregation formula	Reference period
Greece	Carli Index	Unweighted arithmetic mean of the price relatives	Direct elementary index	Fixed base Laspeyres	2005=100
Hungary	Carli Index	Unweighted arithmetic mean of basic price relatives	..	Chained Laspeyres	2005=100
Iceland	Fisher Ideal Price Index	Geometric average of the Laspeyres price index and the Paasche price index	..	Fixed base Laspeyres	4th Quarter 2005=100
Ireland	Variant of Laspeyres index	Base year commodity weights are progressively updated each month and the price indices are derived by dividing the aggregate current monthly value by the corresponding base year value	Direct elementary index	Fixed base Laspeyres	2005=100
Israel	Laspeyres index	Weighted arithmetic mean of price relatives	..	Chained Laspeyres	2005=100
Italy	Jevons index	Unweighted geometric mean of price relatives	Direct elementary index	Chained Laspeyres	2005=100
Japan	Geometric Laspeyres index	DCGPI: Weighted geometric mean of price relatives	Chain elementary index	Chained Laspeyres	2005=100
Korea	Laspeyres Index	Weighted arithmetic mean of price relatives	Direct elementary index	Fixed base Laspeyres	2005=100
Luxembourg	Laspeyres index	Weighted arithmetic mean of price relatives	Direct elementary index	Fixed base Laspeyres	2005=100

Table 6: Index calculation (cont'd)

Country	Computation of lowest level indices			Aggregation formula	Reference period
Mexico	..	..	..	Fixed base Laspeyres	December 2003=100
Netherlands	Jevons index	Geometric mean of the price relatives	..	Fixed base Laspeyres	2005=100
New Zealand	Laspeyres index	Weighted arithmetic mean of price relatives	..	Fixed base Laspeyres	December 2010 quarter = 1000
Norway	Jevons index	Unweighted geometric mean of price relatives	Chain elementary index	Chained Laspeyres	2000=100
Poland	Dutot index	Ratio of the unweighted arithmetic mean of prices	Chain elementary index	Chained Laspeyres	2005=100
Portugal	Carli Index	Unweighted arithmetic mean of price relatives	Direct elementary index	Fixed base Laspeyres	2005=100
Slovak Republic	Laspeyres index	Weighted arithmetic mean of price relatives	Direct elementary index	Modified Laspeyres	2005=100
Slovenia	Carli Index	Unweighted arithmetic mean of prices relatives	Direct elementary index	Chained Laspeyres	2005=100
Spain	Carli Index	Unweighted arithmetic mean of price relatives	Direct elementary index	Fixed base Laspeyres	2005=100
Sweden	Laspeyres index	Weighted arithmetic mean of price relatives	Chain elementary index	Chained Laspeyres	2005=100
Switzerland	Jevons index	Unweighted geometric mean of price relatives	Direct elementary index	Fixed base Laspeyres	December 2010=100
Turkey	Laspeyres index	Weighted arithmetic average of price relatives	..	Fixed base Laspeyres	2003=100
United Kingdom	Dutot index	Ratios of the unweighted mean prices	Direct elementary index	Fixed base Laspeyres	2005=100
United States	Laspeyres index	Weighted arithmetic average of price relatives.	Direct elementary index	Modified Laspeyres	Economic activities: December 1984 = 100 Industrial activities: December 2006=100 Energy: 1982=100 Commodities and Stage of processing: 1982=100

Table 7: Missing prices

Country	Treatment of temporarily missing prices			Selection of replacement items
	Omit the product	Carry forward	Impute the missing prices	
Australia			×	Replacement specifications are obtained from respondents, generally via personal interview
Austria		×	×	The replacement item should have approximately the same weight of production value than the old item
Belgium
Canada		×	×	..
Chile			×	The replacement item is selected with regard to their comparison with the substituted varieties
Czech Republic		×	×	The reporting unit often proposes a replacement item
Denmark	×			The replacement decision is left to the establishment
Estonia			×	..
Finland		×	×	The commodities in the indices and the sample of enterprises are constantly undergoing minor changes, reflecting changes occurring in products and in their quality and in the corporate field.
France		×	×	The enterprise is asked to propose a replacement item
Germany			×	Assessment by experts with market and product knowledge: successor models or other suitable product variants within the existing reporting unit are used as a replacement
Greece		×		When a variety of product is not available by the observation unit, a new one with similar characteristics, representative of the unit, replaces it
Hungary		×		An appropriate replacement item is selected with similar specifications. The overlapping link method is used for the introduction of the new representative
Iceland	×			..
Ireland		×		Units are requested to give a replacement product if a product becomes permanently unavailable

Table 7: Missing prices (cont'd)

Country	Treatment of temporarily missing prices			Selection of replacement items
	Omit the product	Carry forward	Impute the missing prices	
Israel			×	1) A replacement product may be selected, comparable in quality to the missing product, and its price used directly to form a price relative; 2) When the replacement may be deemed non-comparable with the missing product, but prices of both the missing and replacement products may be available in an overlap period before the product was missing, the compilers use the price difference in this overlap period to quality-adjust the replacement product's price until there are at least two observations on the replacement product; 3) The price of a non-comparable replacement may be used with an explicit adjustment for the quality difference to extract the "pure" price change
Italy		×		Products may be replaced by the enterprises. The constraint is their total number that has to be unchanged
Japan		×		..
Korea		×	×	The variety is replaced with another one which has similar characteristics
Luxembourg		×	×	In the case of enterprises stopping production, the monitored products are replaced by other products of additional units
Mexico		×	×	The same data source is searched for the variety closest to the one which is discontinued. If there are no additional data in the source, the process is carried out in another establishment
Netherlands			×	Selected by representativity of turnover
New Zealand		×		Respondent is asked to provide a replacement product that comes under a similar classification and has a similar function. Prices introduced after the redevelopment have guidelines for what should be used to replace these prices
Norway			×	..
Poland	×			Reporting unit selects replacement item analyzing structure of sales value

Table 7: Missing prices (cont'd)

Country	Treatment of temporarily missing prices			Selection of replacement items
	Omit the product	Carry forward	Impute the missing prices	
Portugal		×		..
Slovak Republic			×	A product with similar quality characteristics and sales conditions (that is, within the observed 6 - digit SK CPA 2008 sub-categories) is selected as a replacement. The products replacements are carried monthly. The replacement proposals are submitted by the reporting unit
Slovenia			×	..
Spain
Sweden		×	×	If possible a new product is chosen from the same CN8-number. Else a new product is chosen from the same CN4 (conditioned that the CN4 belongs to the same stratum)
Switzerland		×		A product with similar quality characteristics and sales conditions is selected as a replacement
Turkey			×	Another commodity having the same quality, same type of packaging with the same production and sale characteristics is chosen
United Kingdom			×	If a product becomes permanently unavailable within the year, an appropriate replacement item is selected with specifications close to the previous variety. Replacement items are selected along with the introduction of new products usually at the beginning of each year
United States			×	A replacement product is selected that most closely meets the specifications of the previous item

Table 8.a: Quality adjustment, explicit methods

Country	Explicit methods				
	Expert judgment	Quantity adjustment	Option costs	Production costs	Hedonic approach
Australia			×		
Austria	×				
Belgium	..	..	..	..	..
Canada	..	..	..	..	..
Chile	..	..	..	..	..
Czech Republic	×		×		
Denmark					
Estonia	No quality adjustment				
Finland	×				×, computers
France					×, Manufacture of computers and peripheral equipment" (C26.20 of NACE Rev.2)
Germany			×		×
Greece		×			
Hungary					
Iceland	×				
Ireland	..	..	..	..	..
Israel		×			
Italy					
Japan		×		×	×, computers
Korea				×	×
Luxembourg	..	..	..	..	..
Mexico		×	×	×	
Netherlands	×		×		×

Table 8.a: Quality adjustment, explicit methods (cont'd)

Country	Explicit methods				
	Expert judgment	Quantity adjustment	Option costs	Production costs	Hedonic approach
New Zealand					
Norway	×				×, computers
Poland	No quality adjustment				
Portugal					
Slovak Republic			×		
Slovenia	×		×, cars & computers		
Spain					
Sweden	×			×	
Switzerland	Explicit method				
Turkey					
United Kingdom	×		×		×, computers
United States				×	×, high technology products

Table 8.b: Quality adjustment, implicit methods

Country	Implicit methods				
	Comparable replacement	Overlap pricing	Linked to show no change	Imputed prices	Overlap pricing
Australia					
Austria	×				
Belgium	..	..	..	..	..
Canada	..	..	..	..	..
Chile	..	..	..	..	..
Czech Republic	×	×	×		
Denmark		×	×		
Estonia	No quality adjustment				
Finland		×			
France		×			
Germany	×	×	×		
Greece	×	×			
Hungary		×			
Iceland					
Ireland	..	..	..	..	..
Israel					
Italy		×			
Japan	×	×			
Korea					
Luxembourg	..	..	..	..	..
Mexico					
Netherlands	×	×	×		

Table 8.b: Quality adjustment, implicit methods (cont'd)

Country	Implicit methods				
	Comparable replacement	Overlap pricing	Linked to show no change	Imputed prices	Overlap pricing
New Zealand		×			
Norway					
Poland	No quality adjustment				
Portugal			×		
Slovak Republic		×		×	
Slovenia		×	×		
Spain	×	×			
Sweden		×			
Switzerland					
Turkey		×			
United Kingdom					
United States					

Table 9: Summary

Country	Type of prices	Activity Classification	Domestic' and 'Total'	Computation of lowest level indices	Aggregation formula	Frequency of weight updates	Impute the missing prices	Explicit quality adjustment
Australia	Basic prices	ANZSIC 2006 (corresponds to ISIC Rev. 4 at 4-digit level)	×	AR	Modified Laspeyres	Annually	×	Explicit
Austria	Basic prices	NACE Rev. 2	×	GM	Chained Laspeyres	Annually	×	Explicit / Implicit
Belgium	..	NACE Rev. 2	×	..	..	..	..	..
Canada	Basic prices	NAICS (broadly corresponds to ISIC Rev. 3.1 at 2-digit level)	Total only	RA	Fixed base Laspeyres	Every 5 years	×	..
Chile	Basic prices	ISIC Rev. 3	Total only	GM	Fixed base Laspeyres	10 years	×	..
Czech Republic	..	NACE Rev. 2	×	AR	Modified Laspeyres	Every 5 years	×	Explicit / Implicit
Denmark	Basic prices	NACE Rev. 2	×	GM	Fixed base Laspeyres	Every 5 years	..	Implicit
Estonia	Basic prices	NACE Rev. 2	×	RA	Chained Laspeyres	Annually	×	No quality adjustment
Finland	..	NACE Rev. 2	×	GM	Fixed base Laspeyres	Change as required	×	Explicit / Implicit
France	Basic prices	NACE Rev. 2	×	AR	Fixed base Laspeyres	Every 5 years	×	Explicit / Implicit
Germany	Producer prices	NACE Rev. 2	×	AR	Modified Laspeyres	Every 5 years	×	Explicit / Implicit
Greece	Basic prices	NACE Rev. 2	×	AR	Fixed base Laspeyres	Every 5 years	..	Explicit / Implicit
Hungary	Basic prices	NACE Rev. 2	×	AR	Chained Laspeyres	Annually	..	Implicit
Iceland	Basic prices	NACE Rev. 1	Total only	GM	Fixed base Laspeyres	Annually	..	Explicit
Ireland	Producer prices	NACE Rev. 2	×	RA	Fixed base Laspeyres	Every 5 years	..	..

Table 9: Summary (cont'd)

Country	Type of prices	Activity Classification	Domestic' and 'Total'	Computation of lowest level indices	Aggregation formula	Frequency of weight updates	Impute the missing prices	Explicit quality adjustment
Israel	Purchaser prices	Standard Industrial Classification of all Economic Activities (1993), broadly corresponds to ISIC Rev. 3	Domestic only	AR	Chained Laspeyres	Every 5 to 10 years At lower level of aggregation (groups and classes) weights are updated more frequently	×	Explicit
Italy	Basic prices	NACE Rev. 2	×	GM	Chained Laspeyres	Annually	..	Implicit
Japan	Purchaser prices	Japan Standard Industrial Classification (JSIC) based on ISIC Rev. 3.1	×	GM	Chained Laspeyres	Every 5 years	..	Explicit / Implicit
Korea	..	KSIC 2007	×	AR	Fixed base Laspeyres	Every 5 years	×	Explicit
Luxembourg	Producer prices	NACE Rev. 2	×	AR	Fixed base Laspeyres	Every 5 years	×	..
Mexico	..	Mexican Catalogue of Economic Activities (CMAE-99)	Domestic only	..	Fixed base Laspeyres	Not defined	×	Explicit
Netherlands	Basic prices	NACE Rev. 2	×	GM	Fixed base Laspeyres	Every 5 years	×	Explicit / Implicit
New Zealand	Basic prices	ANZSIC 2006 (corresponds to ISIC Rev. 4 at 4-digit level)	Total only	GM	Fixed base Laspeyres	5-10 years	..	Implicit
Norway	Basic prices	NACE Rev. 2	×	GM	Chained Laspeyres	Annually	×	Explicit
Poland	Basic prices	NACE Rev. 2	×	RA	Chained Laspeyres	Every 5 years	..	No quality adjustment

Table 9: Summary (cont'd)

Country	Type of prices	Activity Classification	Domestic' and 'Total'	Computation of lowest level indices	Aggregation formula	Frequency of weight updates	Impute the missing prices	Explicit quality adjustment
Portugal	Basic prices	NACE Rev. 2	Domestic only	AR	Fixed base Laspeyres	Every 5 years	..	Implicit
Slovak Republic	..	NACE Rev. 2	×	AR	Modified Laspeyres	Every 5 years	×	Explicit / Implicit
Slovenia	Basic prices	NACE Rev. 2	×	AR	Chained Laspeyres	Annually	×	Explicit / Implicit
Spain	Basic prices	NACE Rev. 2	×	AR	Fixed base Laspeyres	Every 5 years	..	Implicit
Sweden	Basic prices	NACE Rev. 2	×	AR	Chained Laspeyres	Annually	×	Explicit / Implicit
Switzerland	Basic prices	NACE Rev. 2	×	GM	Fixed base Laspeyres	Every 5 years	..	Explicit
Turkey	..	NACE Rev. 1	Domestic only	AR	Fixed base Laspeyres	Annually	×	Implicit
United Kingdom	Basic prices	NACE Rev. 2	×	RA	Fixed base Laspeyres	Every 5 years	×	Explicit
United States	..	NAICS (broadly corresponds to ISIC Rev. 3.1 at 2-digit level)	Total only	AR	Modified Laspeyres	Every 5 years	×	Explicit

ANNEX 1 – PPIS IN [OECD.STAT](#)

A new hierarchy of Producer Price Indices (PPIs) was introduced into the OECD's PPI database in June 2009 with the aim of improving the quality and international comparability of PPIs published by the OECD. Three criteria were applied in producing hierarchy:

- **Focus on Output Prices:** Output Prices reflect changes in ex-factory gate prices valued at basic prices.¹⁸ Input Prices reflect changes in prices paid by the producer for raw materials and intermediate goods, and are valued at purchaser's prices. Thus, Output and Input Prices reflect different concepts and do not necessarily move in parallel empirically. Most users identify PPIs with Output Prices and this governed the choice. Also, Input Prices are measured very differently across countries. Consequently, only Output Prices are now published.
- **Well-defined scope:** A significant number of countries publish separate indices for domestic, non-domestic and total markets. PPI series for both total and domestic markets are published when available.
- **Closeness to country practices:** One of the main aims of the review was to take into account the many practices to make maximum use of existing data. The following three types of PPIs cover most practices in OECD countries and allow one to take into account future developments of PPI statistics.
 - i. PPI by Economic activity: PPIs are determined in reference to the higher level of ISIC Rev. 3.1 (section C to E) which "classifies producer units according to their kind of activity, mainly on the basis of the principal class of goods produced or services rendered; that is, ISIC classifies principally by an output-type criterion" (PPI Manual, page 82). Four indicators were identified for publication: 1) PPI for Industrial activities, 2) PPI for Mining and quarrying activities, 3) PPI for Manufacturing, and 4) PPI for Food products and beverages and tobacco¹⁹.
 - ii. PPI by type of commodity/good: PPIs are presented by type of good, which are organized by similarity of end use or material composition, disregarding industry of origin. For European countries, we refer to the definition of Main Industrial Groupings (MIGS)²⁰. Six indicators were identified for publication: 1) PPI Investment goods, 2) PPI Intermediate goods, 3) PPI Consumer goods, 4) PPI Durable consumer goods, 5) PPI Non-durable consumer goods, and 6) PPI Energy.
 - iii. PPI by Stage of processing: PPIs are also presented by class of buyer and degree of fabrication. This structure classifies goods according to their position in the chain of production. Each commodity is allocated to only one stage in the production chain even though it could occur in several stages. Three indicators were identified for publication: 1) PPI Raw materials, 2) PPI Intermediate goods, and 3) PPI Finished goods.

¹⁸ Basic Prices reflect the amount received by the producer exclusive of any taxes on products and transport and trade margins.

¹⁹ See table 4, for the definition of the indicators in reference to the international classifications.

²⁰ Commission Regulations (EC) N° 586/2001 and N° 656/2007.

In principle, 13 indicators per country can be published for both domestic and total markets, each classified by three sets of PPI data: PPI by Activity, PPI by Type of goods and PPI by Stage of processing. Wholesale Prices were only kept for non-member countries. For OECD countries, WPI were replaced by PPIs.

Three area totals (OECD-Total, OECD-Europe and Major Seven) are also shown with time series starting in 1982.

Table 1 - PPIs published in OECD.Stat

Output prices	Total Market		Domestic Market	
	Available series	Except for	Available series	Except for
1 – PPI by Economic Activity				
Industrial activities	23 OECD MC, EUU, EMU	AUS, CAN, CHL, ISL, ISR, JPN, KOR, MEX, PRT, TUR, USA	27 OECD MC, EUU, EMU	AUS, CAN, CHL, ISL, ISR, NZL, USA
Mining and quarrying activities	25 OECD MC, EUU, EMU	AUS, CAN, ISL, ISR, JPN, KOR, MEX, PRT, TUR	28 OECD MC, EUU, EMU	AUS, CAN, CHL, ISL, NZL, USA
Manufacturing	27 OECD MC, EUU, EMU	ISL, ISR, JPN, KOR, MEX, PRT, TUR	29 OECD MC, EUU, EMU, OTO, OEU, OTL, OEL, G7M	AUS, CAN, CHL, NZL, USA
Manufacture of food, beverages and tobacco products	24 OECD MC, EUU, EMU	CHL, ISL, ISR, JPN, KOR, LUX, MEX, PRT, ESP, TUR	26 OECD MC, EUU, EMU	AUS, CAN, CHL, ISR, LUX, NZL, ESP, USA

2- PPI by type of good				
Investment goods	24 OECD MC, EUU, EMU	AUS, CAN, CHL, ISL, ISR, KOR, MEX, NZL, PRT, TUR	23 OECD MC, EUU, EMU	AUS, CAN, CHL, ISL, ISR, KOR, MEX, NZL, CHE, TUR, USA
Intermediate goods	23 OECD MC, EUU, EMU	AUS, CAN, CHL, ISL, ISR, JPN, KOR, MEX, NZL, PRT, TUR	22 OECD MC, EUU, EMU	AUS, CAN, CHL, ISL, ISR, JPN, KOR, MEX, NZL, CHE, TUR, USA
Consumer goods	23 OECD MC, EUU, EMU	AUS, CAN, CHL, ISL, ISR, KOR, MEX, NZL, PRT, CHE, TUR	22 OECD MC, EUU, EMU	AUS, CAN, CHL, ISL, ISR, KOR, MEX, NZL, POL, CHE, TUR, USA
Durable Consumer goods	23 OECD MC, EUU, EMU	AUS, CAN, CHL, ISL, ISR, KOR, LUX, MEX, NZL, PRT, TUR	22 OECD MC, EUU, EMU	AUS, CAN, CHL, ISL, ISR, KOR, LUX, MEX, NZL, CHE, TUR, USA
Non Durable Consumer goods	24 OECD MC, EUU, EMU	AUS, CAN, CHL, ISL, ISR, KOR, MEX, NZL, PRT, TUR	23 OECD MC, EUU, EMU	AUS, CAN, CHL, ISL, ISR, KOR, MEX, NZL, CHE, TUR, USA
Energy	23 OECD MC, EUU, EMU	AUS, CAN, CHL, FIN, ISL, ISR, JPN, KOR, MEX, PRT, TUR	22 OECD MC, EUU, EMU	AUS, CAN, CHL, FIN, ISL, ISR, JPN, MEX, NZL, CHE, TUR, USA
3 – PPI by Stage of processing				
Primary products	AUS, CAN, JPN, KOR, USA	29 OECD MC	AUS, JPN, KOR	31 OECD MC
Intermediate goods	AUS, CAN, JPN, KOR, USA	29 OECD MC	AUS, JPN, KOR	31 OECD MC
Finished goods	AUS, CAN JPN, KOR, USA	29 OECD MC	AUS, JPN, KOR	31 OECD MC

Considering the availability of PPIs among countries, the relevant target indicators were defined following two additional criteria: the length of the series and the economic significance of the indicators. As a result, the series PPI for domestic manufacturing was chosen as the only target indicator. It measures the average price development of all goods and related services from the manufacturing industries sold on the domestic market. Data are available for 29 of the 34 OECD member countries, the Euro Area and the European Union. Three areas (OECD-Total, OECD-Europe, Major Seven) are computed by the OECD with data going back to 1982.

ANNEX 2 - ACCESS TO DETAILED METHODOLOGICAL INFORMATION

Detailed methodological information for producer prices for individual OECD Member countries may be accessed from the sources listed in the following table:

	National sources	IMF DSBB
Australia	ABS Explanatory Notes (English)	IMF PPI Australia
Austria	http://www.statistik.at/web_en/statistics/Prices/industrial_output_price_index/index.html (English)	IMF PPI Austria
Belgium	..	..
Chile	http://www.ine.cl/canales/chile_estadistico/estadisticas_precios/ipp/series_estadisticas/series_estadisticas.php	IMF PPI Chile
Canada	http://www.statcan.gc.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=2318&lang=en&db=imdb&adm=8&dis=2 (English)	IMF PPI Canada
Czech Republic	http://www.czso.cz/csu/2009edicniplan.nsf/engt/740025BAB8/\$File/70040910m_aj.pdf (English)	IMF PPI Czech Republic
Denmark	..	IMF PPI Denmark
Estonia	..	..
Finland	http://www.stat.fi/meta/til/thi_en.html (English)	IMF PPI Finland
France	http://www.insee.fr/fr/methodes/default.asp?page=sources/ope-ind-ippi.htm (French) http://www.insee.fr/fr/indicateurs/indic_conj/donnees/method_idconj_25.pdf (French)	..
Germany	http://www.destatis.de/jetspeed/portal/cms/Sites/destatis/Internet/EN/press/abisz/Erzeugerpreise_e.templateId=renderPrint.psml (English)	IMF PPI Germany
Greece	http://www.statistics.gr/portal/page/portal/ESYE/PAGE-themes?p_param=A0503&r_param=DKT15&y_param=MT&mytabs=0 (English)	IMF PPI Greece
Hungary	http://portal.ksh.hu/pls/ksh/ksh_web.meta.objektum?p_lang=EN&p_menu_id=110&p_ot_id=100&p_obj_id=OSI&p_session_id=15253892 (English)	..
Iceland	http://www.statice.is/pages/1548/?src=../vorulysingar_en/v_transporter.asp?filename=V18605.htm (English)	..
Ireland	..	..
Israel	http://www1.cbs.gov.il/reader/prices/price_main_division_e.html?MainDivision=b&MyMonth=10&MyYear=2010 (English)	IMF PPI Israel
Italy	http://en.istat.it/salastampa/comunicati/in_calendario/preprod/20101129_00/ (English)	..
Japan	http://www.boj.or.jp/en/type/exp/stat/pi/excgpi02.htm (English)	IMF PPI Japan
Korea	http://ecos.bok.or.kr/jsp/use/metadata_e/MetaDataCil.jsp?actionType=SearchView&KE_GUBUN=EN&dataGubun=M00027 (English)	IMF PPI Korea
Luxembourg	..	IMF PPI Luxembourg
Mexico	..	IMF PPI Mexico

Netherlands	..	..
New Zealand ¹	http://www.stats.govt.nz/browse_for_stats/economic_indicators/prices_indexes/producers-price-index-info-releases.aspx (English)	..
Norway	http://www.ssb.no/priser_en/b (English)	IMF PPI Norway
Poland	..	IMF PPI Poland
Portugal	..	IMF PPI Portugal
Slovak Republic	http://portal.statistics.sk/showdoc.do?docid=3075	IMF PPI Portugal
Slovenia	http://www.stat.si/eng/tema_ekonomsko_cene.asp	IMF PPI Slovenia
Spain	http://www.ine.es/en/daco/daco42/daco423/metoipri05_en.pdf (English)	IMF PPI Spain
Sweden		IMF PPI Sweden
Switzerland	http://www.bfs.admin.ch/bfs/portal/fr/index/news/publikationen.Document.49615.pdf (French)	IMF PPI Switzerland
Turkey	http://www.turkstat.gov.tr/PreTablo.do?tb_id=18&ust_id=6 (English)	IMF PPI Turkey
United Kingdom	National Statistics Online - Product	..
United States	http://www.bls.gov/opub/hom/pdf/homch14.pdf (English)	IMF PPI United States

¹ New Zealand do not subscribe to the IMF DSBB at date of publication; ...: metadata are not available.

ANNEX 3 - HIGH LEVEL CONCORDANCE BETWEEN ISIC REV. 3.1 AND ISIC REV. 4

The objective of the move to ISIC Rev. 4 is to reflect different forms of production, newly emerging industries and the new needs for economic analysis with the aim of maintaining close links to ISIC rev. 3.1.

The main changes between Rev. 3 and Rev.4 are: the increase in top level categories (from 17 sections to 21); the increase in overall detail (292 classes to 419); the introduction of new concepts at higher levels (e.g. information and communication, support services) and the introduction of new applications rules such as vertical integration or outsourcing.

The concordance relationship between Rev. 3 and Rev.4 for section C, Mining and quarrying, Section D, Manufacturing and section E, Electricity, gas and water supply of ISIC Rev. 3.1 is shown below:

- **Mining and quarrying** – Section C of ISIC Rev.3.1 to Section B of ISIC Rev.4

Minor changes
• Division 09: Mining support services activities is separately identified

- **Manufacturing** – Section D of ISIC Rev.3.1 to Section C of ISIC Rev.4

New Divisions
• Division 21: Manufacture of basic pharmaceutical products and pharmaceutical preparations
• Division 26: Manufacture of computer, electronic and optical products → Differs from division 30 Manufacture of office, accounting and computing machinery of ISIC Rev.3.1
• Division 11: Manufacture of beverages → Results from splitting existing divisions of ISIC Rev.3.1
• Division 31: Manufacture of furniture → Results from splitting existing divisions of ISIC Rev.3.1
Restructuring Division
• Division 33: Repair and installation of machinery and equipment → Classified in ISIC Rev.3.1 under the corresponding type of equipment
Moved Divisions
• Division 22 of ISIC Rev.3.1: Publishing, printing and reproduction of recorded media → Move to section J of ISIC rev. 4: Information and communication
• Division 37 of ISIC Rev.3.1: Recycling → Move to E of ISIC rev. 4: Water supply; sewerage, waste management and remediation activities

- **Electricity, gas and water** – Section E of ISIC Rev. 3.1 to Section D & E of ISIC Rev. 4

New Section
• Section D - Electricity, gas, steam and air conditioning supply
• Section E - Water supply; sewerage, waste management and remediation activities
Moved Divisions
• Division E 40.3 of ISIC Rev. 3.1: Steam and hot water supply → Move to E of ISIC rev. 4: Water supply; sewerage, waste management and remediation activities
• Division E 41 of ISIC Rev. 3.1: Collection, purification and distribution of water → Move to E of ISIC rev. 4: Water supply; sewerage, waste management and remediation activities