Statistics

in focus

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The Index of purchasing power of the euro
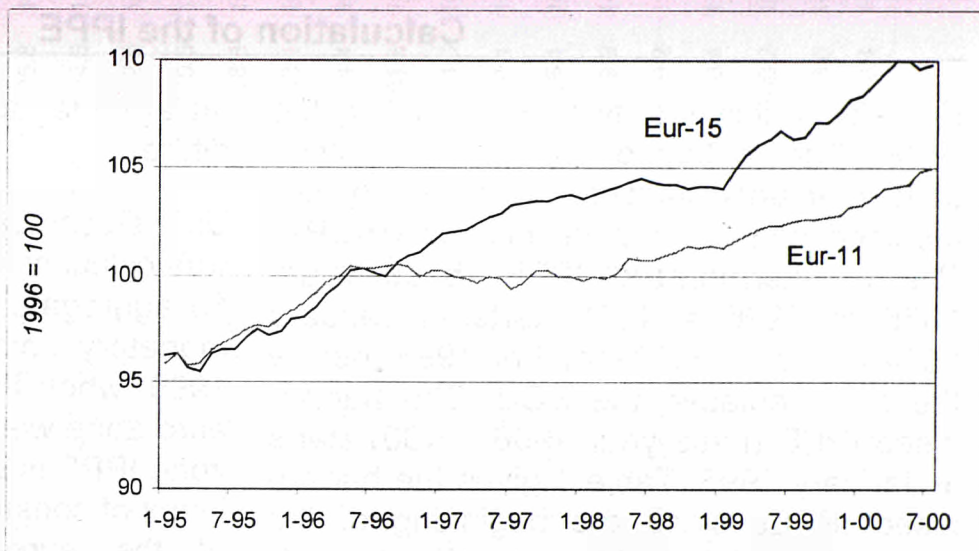
Luca Ascoli

*Figure 1: Index of purchasing power of the euro, harmonised
(ECU up to 31.12.1998)*

The 'Index of purchasing power of the euro' (IPPE) is based on one of the key economic indicators produced by Eurostat, the Harmonised index of consumer prices (HICP). The IPPE measures the change in consumer prices in a country, denominated in a common currency, the euro (formerly the ECU). In other words, it is based on the national consumer price indices, but an adjustment is made for exchange rate movements between the euro and the national currency. In this way, changes in the value of the euro, in terms of its purchasing power in each country, can be measured. As the euro replaced the ECU on 1 January 1999 on a one-for-one basis, there was no break in the series at that time.

The index, which is produced monthly by Eurostat, has certain analytical uses. However, as explained in more detail later, it is particularly useful for indexation of contracts denominated in euro (or pre-1999 contracts denominated in ECU). In other words, the value of a contract can be safe-guarded against both exchange rate and price movements. If, for example, a contract denominated in euro is signed with a service provider based in the United Kingdom, the value of the contract in terms of pounds sterling can be kept

constant by inserting a clause linking it to the IPPE.

In addition to national series, aggregate IPPE series compiled using a weighted average of the 11 euro-zone countries or 15 EU countries, are useful for particular types of contract, for example where a contracting party is operating in several countries at once. Figure 1 shows the trend in the IPPE of the euro-zone and EU-15 since 1995. A rise in the IPPE means a fall in the purchasing power of the euro. This may be caused by a rise in consumer prices, a rise in the exchange rate against the euro, or else both factors at once.

Calculation of the IPPE

Eurostat publishes two versions of the IPPE. One is based on non-harmonised consumer price indices, the other on harmonised consumer price indices (HICP)[1]. The non-harmonised IPPE (base years 1985 or 1996 = 100) starts in January 1974 and ends in December 1998, before the euro replaced the ECU. The harmonised IPPE (base year 1996 = 100) starts in January 1995. Table 1 gives the harmonised IPPEs since the beginning of the third stage of monetary union in January 1999. For the formula used for calculating the IPPE, see the Annex of this publication.

National IPPE series are calculated for all EU Member States, plus the USA, Japan, Norway, Iceland, and Switzerland. They will also soon be available for a number of EU Accession Countries. Calculation of the euro-zone and EU-15 aggregate series is as follows. The EU-15 aggregate is a weighted combination of the IPPEs of each of the 15 countries. The weights are exactly the same as those used in the calculation of Eurostat aggregate consumer price indices: they are derived from total private final domestic consumption expenditure.

Until December 1998 the euro-zone IPPE was calculated in the same way as the EU-15 aggregate, but on the basis of the 11 monetary union countries. Since January 1999, when the national currencies of the euro-zone were fixed to the euro, the euro-zone IPPE is based on the Monetary union index of consumer prices (MUICP, or HICP of the euro-zone). This ensures that changes in the euro-zone IPPE are identical to changes in the MUICP, which is logical because of the absence of exchange rate movements. In fact, because the IPPE (as with the HICP) is by convention calculated to one decimal place, there may be a rounding difference between the two indices.

Similarly, since January 1999 changes in the IPPE of each of the euro-zone countries are equal to changes in the respective country's HICP, although here again there may be a rounding difference.

The euro-zone aggregate is only available in the harmonised IPPE, whereas the EU-15 aggregate is available in both the harmonised and (until December 1998) non-harmonised IPPE. Two other aggregates were also calculated for the non- harmonised IPPE: ERM (combining countries which participated in the exchange rate mechanism of the European Monetary

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[1] The HICP was launched in order to provide a comparable measure of consumer price inflation in the EU. It provides the only official measure of consumer price inflation in the euro-zone for the purposes of monetary policy. The European Central Bank inflation target is based on the HICP of the euro-zone. The HICP has replaced to this extent any other measure of consumer price inflation that may have been used at national level before entering Stage III of monetary union.

Table 1:
Purchasing power of the euro, harmonised: monthly indices (1996=100)

	1999												2000						
	01	02	03	04	05	06	07	08	09	10	11	12	01	02	03	04	05	06	07
EUR-11	101.3	101.6	101.9	102.2	102.3	102.3	102.5	102.6	102.6	102.7	102.8	103.2	103.3	103.7	104.1	104.2	104.3	104.8	105.0p
EU-15	104.1	104.8	105.6	106.1	106.4	106.7	106.4	106.5	107.1	107.1	107.6	108.2	108.4	108.9	109.4	110.0	110.0	109.6	109.8p
B	100.1	100.3	100.3	100.7	100.9	100.7	100.9	100.7	101.0	101.1	101.3	101.7	101.9	102.4	102.9	103.1	103.4	103.8	104.0
DK	102.5	103.0	103.7	104.0	104.3	104.7	104.3	104.6	105.0	105.1	105.3	105.4	105.3	105.8	106.5	106.7	107.0	107.3	106.9
D	99.4	99.6	99.8	100.2	100.2	100.3	100.8	100.8	100.5	100.4	100.5	100.9	101.3	101.6	101.8	101.7	101.6	102.3	102.8
EL	104.4	104.2	106.6	106.9	106.7	106.9	104.4	103.8	105.7	105.3	105.7	106.3	104.5	103.3	105.8	106.0	105.8	105.2	103.3
E	101.1	101.1	101.5	101.9	101.9	101.9	102.4	102.9	103.1	103.0	103.2	103.6	103.9	104.1	104.6	105.0	105.2	105.5	106.2
F	100.5	100.9	101.2	101.5	101.5	101.5	101.2	101.4	101.6	101.7	101.8	102.3	102.2	102.4	102.9	102.9	103.1	103.4	103.2p
IRL	104.2	104.9	105.2	105.9	106.6	106.9	106.4	107.1	107.6	107.7	107.9	109.2	108.9	109.8	110.5	111.2	112.0	112.6	112.6
I	105.7	105.9	106.1	106.3	106.6	106.6	106.9	106.9	107.2	107.4	107.6	107.8	108.0	108.4	108.8	108.8	109.2	109.5	109.7
L	98.1	100.0	100.1	100.5	100.8	100.7	99.5	101.1	101.3	101.6	101.7	102.1	101.5	102.6	103.1	103.8	103.8	105.2	104.1
NL	101.0	101.7	102.7	103.0	103.0	102.5	101.9	102.6	103.1	103.2	103.4	102.9	102.6	103.2	104.4	104.8	105.0	105.0	104.8p
A	99.6	99.8	99.9	99.9	100.0	99.6	99.7	99.9	99.8	100.2	100.5	101.4	101.0	101.7	101.8	101.6	101.6	101.9	101.6p
P	102.7	102.7	103.1	103.8	103.9	104.1	104.1	103.9	103.8	104.0	104.7	104.9	104.7	104.4	104.6	105.7	106.4	107.0	107.5
FIN	100.3	100.7	100.9	101.7	102.0	102.0	101.7	101.8	102.3	102.4	102.4	102.7	102.6	103.4	104.1	104.3	104.8	105.2	104.7
S	96.1	98.0	98.3	98.7	98.4	99.9	100.4	100.3	102.5	101.6	102.3	103.2	102.5	104.0	106.1	107.5	108.5	107.5	105.7
UK	119.9	122.7	126.4	128.2	129.9	131.4	129.0	129.0	132.2	132.3	134.4	136.9	137.4	138.7	139.9	143.4	142.9	136.8	137.5
IS	108.6	109.9	111.6	112.6	112.9	115.4	115.7	116.0	118.4	119.9	122.3	124.3	124.8	126.8	129.2	132.3	134.0	129.0	127.7
NO	100.1	100.4	102.6	105.2	106.2	107.2	106.7	105.2	106.5	106.3	108.0	109.4	109.5	110.3	110.4	110.3	109.8	109.8	110.4
CH (¹)	98.2	99.0	99.3	99.0	98.8	99.3	98.8	99.5	99.6	100.1	99.4	99.9	99.5	100.0	100.2	102.1	103.3	103.4	104.3
US (¹)	114.6	118.8	122.7	125.7	126.6	129.7	130.3	127.5	129.5	127.2	131.8	134.7	135.3	139.7	143.6	146.4	153.2	147.0	148.5
JP (¹)	107.4	107.5	108.0	110.3	109.0	112.4	113.5	117.3	125.7	124.6	130.0	135.2	131.3	129.8	136.4	140.4	143.1	139.0	:

¹ *Based on non-harmonised consumer price indices (1996=100).*
P = provisional.

System), and ECU (combining currencies which where part of the ECU basket). As the European Monetary System and the ECU ceased to exist once the euro came into being in January 1999, these two aggregates were discontinued.

Use of the IPPE in contracts

The IPPE is one of many different ways of indexing contracts. Other ways include the HICP and its sub-indices, and producer price, export price, and labour cost indices. Out of these indices, the IPPE is the only index whose purpose is to compensate for both exchange rate changes and inflation.

Why might this be important? To take an example, an international organisation with offices throughout the EU signs a contract with a company for providing cleaning services. The contract is denominated in euro and lasts several years. Both parties accept that indexation is worthwhile as a means of maintaining the value of the contractual payments in real terms (in other words, to compensate for inflation). In addition, both parties are concerned about exchange rate movements against the euro, for those offices which are not located in the euro-zone. Depreciation of the euro would mean a fall in the value of the contract when translated into another currency, which would benefit the service provider but would be disadvantageous to the organisation requiring the service. Appreciation of the euro would have the opposite effect. By indexing the contract against the IPPE (EU-15 aggregate), both parties can safeguard the value of the contract against both exchange rate and inflation movements.

For <u>contracts which start in January 1999 or later</u>, only the harmonised IPPE is available (the non-harmonised index ends in December 1998). However, in cases where the contract is to be indexed to the euro-zone aggregate or one of the 11 euro-zone countries, the HICP and not the IPPE should on principle be used. This is because exchange rate movements are no longer relevant: they cease to exist. Also, although movements in the IPPE are identical to those of the HICP, this is not strictly the case once the figures are rounded (unless stated otherwise in the contract, the IPPE should be rounded to one decimal place). The formula used for calculating the revised price of a contract linked to the harmonised IPPE is contained in the Annex.

For <u>contracts starting before January 1999</u>, both the harmonised IPPE (from 1995 onwards) and non-harmonised IPPE were available. However, as the non-harmonised index ended in December 1998, in the case of contracts linked to this index a link needs to be created with the harmonised index, so that indexation of the contract can continue in 1999 and beyond. The formula and conversion factors to be used are contained in the Annex.

Where to find IPPE data

The harmonised IPPE (base year 1996 = 100) appears every month in the Eurostat publication 'Money, finance, and the euro: statistics'. For the full series from January 1995, you have to consult the quarterly CD-ROM of 'Money, finance, and the euro: statistics', or else the Eurostat time series database New Cronos. The

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CD-ROM and New Cronos also contain the full series of non-harmonised IPPE for the base years 1985 and 1996 = 100, which end in December 1998.

In addition, a non-rounded harmonised IPPE appears on the CD-ROM and New Cronos. Normally, the IPPE should be rounded to one decimal place. The non-rounded series is published in case more than one decimal place is specifically needed, and to show that the data for the euro-zone from January 1999 onwards are identical (in terms of percentage changes) to the respective HICP data.

Updating of the harmonised IPPE is made every month, normally towards the end of the month following the month to which the data refer. Revisions policy is the same as for the HICP. The latest month's data for one or two countries are provisional, so the latest euro-zone and EU-15 aggregate indices are also provisional. Occasionally, revisions of more than one month may be necessary, depending on revisions to the HICP.

The New Cronos address for IPPE is: theme 2, domain MNY, collection PUR-CHPO. Annual, quarterly and monthly data are available.

Summary

The index of purchasing power of the euro (IPPE) measures, through changes in consumer prices and exchange rates, changes in the value of the euro in particular countries as well as in the EU and euro-zone as a whole. The index has certain analytical uses. For contracts, it is a valuable tool for safeguarding the value of payments in euro against exchange rate and price movements.

One objective of this *Statistics in Focus* has been to explain the impact of monetary union on the IPPE. On the one hand, no series break occurred on 1 January 1999, as the ECU and euro were deemed to be of equal value on that date. On the other hand exchange rate movements in the euro-zone have been eliminated, with the result that movements in the IPPE of the euro-zone (and of the individual member countries) are identical to those of the HICP. In the case of contracts starting in January 1999 or later, indexed to the euro-zone aggregate or country, it is recommended that the HICP and not the IPPE be used.

Annex :
Formulae for calculation of IPPE and for revision of contracts

Calculation of the IPPE is according to the following formula:

$$IPPE_t = CPI_t \cdot \frac{EUR_t}{100}$$

where:

IPPE = index of purchasing power of the euro

CPI = consumer prices index

EUR = euro (ECU) exchange rate index
of the national currency

t = latest month

Where the harmonised IPPE has been used in a contract, to calculate the revised price of the contract, the following formula should be used:

$$P_t = P_0 \cdot \frac{IPPE_t}{IPPE_0}$$

where:

P= contract payment

t= latest month

o= month in which the contract started

In cases where the non-harmonised IPPE has been used in a contract, the following formula should be used to calculate the revised price of the contract:

$$P_t = P_0 \cdot \frac{IPPE_t^h}{IPPE_0^{nh}} \cdot \text{conversion factor}$$

where:

P = contract payment

t = latest month

0 = month in which the contract started

h = harmonised

nh = non-harmonised

Country or zone	1985=100	1996=100
EUR-11	1.390595	1.007678
EUR-15	na *	na *
B	1.464393	1.002006
DK	1.504892	1.012720
D	1.489447	1.008040
EL	1.581574	1.000960
E	1.463294	1.000992
F	1.386521	0.999009
IRL	1.221905	1.000952
I	1.293561	1.000947
L	1.451904	1.001002
NL	1.448515	1.006931
A	1.547643	0.998997
P	1.657614	1.003880
FIN	1.156219	1.000995
S	1.240561	0.971953
UK	1.206126	1.032285

Table 2: Conversion factors

The conversion factor is calculated by dividing the non-harmonised IPPE for December 1998, with the harmonised IPPE of the same date. The results are shown in Table 2. Choice of factor depends on both the country or zone and the base year of the non-harmonised index (1985 or 1996).

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* *Not applicable: the non-harmonised index did not include a euro-zone aggregate. Note also that conversion factors for the ERM and ECU aggregates are not provided, as these are unlikely to have been used in any contracts.*

As an example, a contract began in January 1995, in which a payment due in January 2000 was indexed to the non-harmonised IPPE of the EU-15, base year 1985. The value of the payment in January 1995 was EUR 100, when the non-harmonised IPPE was 132.0. The harmonised IPPE in January 2000 was 108.4.

To calculate the revised payment, divide the January 2000 harmonised IPPE by the January 1995 non-harmonised IPPE, then multiply by the conversion factor and the original value of the payment:

$$P_t = ECU\,100 \cdot \frac{108.4}{132.0} \cdot 1.390595 = ECU\,114.20$$

Note that the IPPE should always be rounded to one decimal place, unless stated otherwise in the contract. However, the conversion factors as shown in Table 2, should not be rounded.

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Further information:

➤ **Reference publications**

Title	Money, finance and the euro: statistics		
Catalogue No	CA-DQ-00-007-3A-C	Price	EUR 15

➤ **Databases**

New Cronos
Domain MNY

To obtain information or to order publications, databases and special sets of data, please contact the **Data Shop** network:

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