

# THE EUROPEAN UNION HARMONIZED INDICES OF CONSUMER PRICES (HICP) BY

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## A. BACKGROUND TO THE HICPs

The first of January 1999 was a historic date in the process of European economic integration. Stage III of Economic and Monetary Union began with 11 countries participating in the single currency. From that date, there is a single interest rate applied in the euro-zone, fixed by the European Central Bank (ECB). Mr Wim Duisenberg, the President of the ECB, announced in October 1998<sup>1</sup> that it would be operating a flexible monetary policy strategy, based on an explicit inflation target, a monetary reference value, and a mix of other indicators.

In addition, Mr Duisenberg said that as required by the Treaty the maintenance of price stability would be the primary objective of the European System of Central Banks (ESCB). He went on to say that *“price stability shall be defined as a year-on-year increase in the Harmonised Index of Consumer Prices for the euro area of below 2%”*.

This paper describes the essential aspects of the HICPs, and the work that remains to be done, including the preparations for the next enlargement of the EU.

At the time when the Maastricht Treaty<sup>2</sup> was written, each EU Member State used to compile its own CPI, which had developed according to the perceived needs of each country – often with the principal objective of having an index which could be used to uprate the wages of workers in order to preserve their purchasing power (a “compensation” index). The result was that a simple comparison of national CPIs did not necessarily give an accurate comparison of relative rates of consumer price inflation.

Acknowledging this, the Treaty stated that *“inflation shall be measured by means of the consumer price index on a comparable basis, taking into account differences in national definitions”*. Subject to this point, the Treaty stipulated that *“the criterion on price stability shall mean that a Member State has a price performance that is sustainable and an average rate of inflation, observed over a period of one year before the examination, that does not exceed by more than 1 ½ percentage points that of, at most, the three best performing Member States in terms of price stability.”*<sup>3</sup>

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<sup>1</sup> See text distributed at ECB Press Conference, Frankfurt, 13.10.98

<sup>2</sup> Treaty on European Union (Office for Official Publications of the EC, Luxembourg, 1992)

<sup>3</sup> Ibid (Article 1 of the Protocol on the convergence criteria referred to in Article 109j of the Treaty establishing the European Community)

This requirement for comparability spurred Eurostat into action to require Member States to provide CPIs which were comparable with one another. Although the project became known as “harmonisation”, the essential point was that the new indices would be comparable with one another, within fairly tight limits. Eurostat’s view has always been that Member States should be allowed to decide on their own specific procedures, provided that comparability was not threatened. “Comparability” is generally defined as a tolerance of  $\pm 0.1$  percentage points on the overall indices.

Eurostat has a tradition of having a high level of collaboration with Member States: we prefer to get results through consensus, reinforced where necessary by legal acts. That approach has meant that many hours and days have had to be spent discussing the many technical and practical issues arising in this complex field. The technical Working Party on HICPs began work in June 1993, since when it has met for a total of some 35 days. In addition, it created several subsidiary Task Forces, which have met for a total of about 50 days. This effort has resulted in a framework EC Council Regulation<sup>4</sup> and, to date, a further 10 legal acts and formal guidelines.

## **B. INDEX TYPE**

The starting point in 1993 was the set of national CPIs produced by each country. Many of these grew up in the earlier years of this century when the aim was to have a “compensation” index. This concept still underlies a number of CPIs.

Another concept is the “cost-of-living” index. This aims to measure the increase in the price of a basket of goods and services which changes in time but nevertheless maintains a constant utility to the average consumer.

Yet another concept is the national accounts deflator: an index which can be used to deflate current-price consumers’ expenditure, as measured in the national accounts, in order to measure the changing volume of consumers’ expenditure.

Finally we have the concept which we decided we should use in the HICPs, which is a “pure” inflation index. What does this mean? And why was this concept chosen?

The answer to the second question lies in the Maastricht Treaty – we were trying to find an index which would serve as the best proxy for an index of price stability, or inflation in a macroeconomic context. The problem was that there is no operational definition of “inflation”. Definitions exist only on a general level: the most widely accepted is probably: “*inflation is a persistent increase in the general level of prices.*” But this does not greatly help the practitioner.

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<sup>4</sup> Council Regulation (EC) N° 2494/95 (Official Journal of the EC, N° L257/1, 27.10.95)

In practice, “inflation” is what happens to be the index used to measure it! We decided at an early stage that inflation is essentially a monetary phenomenon. It concerns the changing power of money to purchase goods and services. This led us down two important paths. Firstly, the HICPs would be concerned only with actual monetary transactions. So, for example, in the field of housing, we would not use the imputed rents method to measure the price of owner-occupied housing. (This is a valuable concept in the context of the measurement of the volume of consumption of housing services, but it is irrelevant in the context of the measurement of price change). Secondly, we would not include the cost of borrowing money, which is neither a good nor a service. So interest payments were to be excluded. This immediately set the HICP apart from some national CPIs which include interest payments on the grounds that they form part of the regular outgoings of households: a perfectly reasonable argument in the context of a compensation index, but less so for an inflation index.

But even having settled the general concept of the HICP, there were still some very different approaches which it was necessary to decide upon. Perhaps the most important was the question of the fixity of the basket of goods and services whose changing price has to be measured.

Most CPIs use the Laspeyres index, or some variant of it. This implies measuring the price over time of a basket of goods and services which remains constant, both in terms of the actual products and their relative quantities, for a certain period of time. This period can vary considerably, but is usually limited to a maximum of 10 years and a minimum of 1 year – in the latter case the index is known as a “chained Laspeyres” index. The Laspeyres index is relatively easy to compile, but suffers from the fact that it becomes increasingly unrealistic with the passage of time: the typical consumption basket does change, and in these days it changes with accelerating rapidity.

Another type of index is the Paasche index, which also uses a fixed basket, but the contents of the basket relates to current consumption patterns rather than those of a previous period. The difficulty here is a purely practical one: the measurement of consumption patterns is complex and it takes time, so that the Paasche index cannot be calculated for a current monthly index.

The Laspeyres index answers the question: what would be today’s price of a basket of goods and services which was typical of consumers expenditure in the base period? The Paasche index answers the question: what would be the price in the base period of a basket of goods and services typical of the consumption of today’s average consumer? The mathematically ideal index is the Fisher index, which is the geometric mean of the two – but of course to have a mean it is necessary to have both elements, and, as already mentioned, the Paasche index is ruled out on practical grounds.

We were therefore left with the Laspeyres concept, and the only decision to be made was to decide on a maximum period between re-basings of the basket. This was difficult, because some countries already had an annual re-basing, whereas others were up to 10 years. The question has an important cost aspect, because an annual re-basing may require an annual Household Budget Survey (HBS). It also has an important effect on the resulting index, because the longer the frequency of re-basing, the higher an index tends to be.

## **C. HICPs AND NATIONAL CPIs**

It will be apparent from the above that the underlying concept of the HICP would in many cases differentiate it from the national CPI. In fact, it was decided at a very early stage that it would not be prudent, for several reasons, to proceed on the assumption that the HICPs would replace the national CPIs. Indeed, all the early press releases stressed the fact they were designed primarily to facilitate international comparisons of consumer price inflation across the EU. This is clearly not an objective of national CPIs. So far, only Luxembourg has adopted the HICP as its national CPI. However, many of the technical aspects of HICP construction are used also in national CPIs: it would not be cost-effective, for example, to have one set of sampling rules for the CPI and another for the HICP. So it may be expected that over time there will be a gradual convergence between national CPIs and the HICPs.

## **D. SOME MAJOR TECHNICAL ISSUES.**

### **Product coverage: non-market services**

In most cases goods and services on the market are sold at a price determined by normal market processes. But in several important sectors, especially healthcare and education, it is common to have partial or total subsidies provided by the state. This raises difficult problems in CPI construction, regarding both concept and measurement.

Some experts argued that the full, unsubsidised, price of such products should be included. Why? Firstly, an inflation measure requires the measurement of the changing prices of the entire product, not just the part which falls to the consumer to pay. Secondly, given the differing subsidy arrangements in Member States, better comparability would be achieved by including the price of the whole product rather than just the unsubsidised part.

Others argued that the HICP does not aim to measure total inflation, but just that part impacting on the private household sector (see Section A). Government subsidies for health and educational products should form part of an index of government prices: this is indeed implicitly stated in the framework Regulation. They also argued that comparability does not imply uniformity: an analogy could be drawn with, say, food prices, where the fact that country A might consume more fish than meat does not mean that its food price index could not be compared with country B which consumes more meat than fish.

The solution finally adopted owes much to the work of Peter Hill. He showed that within the ESA structure it was possible to define an element of expenditure, which he named HFMCE, which related solely to that part of the expenditure actually paid by private households. So that, for example, if 80% of a chemist's prescription charge is reimbursed by the government, only the remaining 20% would be included in the HICP. A change in the subsidy would have a similar effect on the "market" price to a change in VAT, which, of course, is also included in all CPIs.

## Owner-occupied housing

A special coverage problem concerns owner-occupied housing. This has always been one of the most difficult sectors to deal with in CPIs.

Strictly, the price of housing should not be included in a CPI because it is classified as capital. On the other hand, the national accounts classifies imputed rents of owner-occupiers as part of consumers' expenditure. This is a reasonable thing to do if the aim is to measure the volume of consumption of the capital resource of housing. But that is not what a CPI is measuring.

Some countries, following the compensation index concept, would prefer to have mortgage interest included in the HICP. This approach could indeed be defended for a compensation index, because there is no doubt that the monthly mortgage payment is an important element in the budget of many households: a rise in the interest rate acts in exactly the same way as a price increase from the point of view of the individual household. But this is not acceptable for a wider inflation index.

So, after many hours of debate, the Working Party came to the conclusion that there were just two options. The first was simply to exclude owner-occupied housing from the HICP. One could at least argue that this was a form of harmonisation, although it is worrying that there are such large differences between Member States in the percentages of the population which own or rent their dwellings. Exclusion also falls in line with the international guideline issued 10 years ago by the ILO<sup>5</sup>. Furthermore, it would be possible to supplement the HICP with a separate house-price index, which could be used by analysts as part of a battery of inflation indicators.

The second option was to include owner-occupied housing on the basis of acquisition costs, essentially treating them like any other durable. Most secondhand housing would be excluded: in practice the index would include new houses plus a small volume of housing new to the household sector (sales from the company or government sectors to the household sector).

The main problem here is practical: several countries do not have new house price indices and their construction could be difficult and costly. A Task Force is at present examining these matters. Final recommendations are due at the end of 1999.

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<sup>5</sup> R. Turvey et al., "Consumer Price Indices: an ILO Manual" (ILO, Geneva, 1989)

## **Common Basket of Products**

It is often assumed that the prime candidate for harmonisation is the basket of goods and services whose changing prices we are measuring. In fact we deliberately did not try to harmonise this. Each country in Europe is different; their consumers spend their money on different products and in different proportions. It would have been perverse to require Member States to compile an index unrelated to the actual economic situation in their country. Germans drink beer, Italians drink wine. There is no reason to invent an average European. If the price of German beer rises, then the German index will rise. The Italian index will not rise, and nor should it. So each country has its own basket, derived from its own consumption pattern.

## **Geographic coverage**

A quite different aspect of HICPs is the question of geographic coverage. This is a matter of special interest in the EU, given the fact that the Monetary Union (MU) is only a subset of the EU, and is likely to be a subset for some time, as the memberships of both the MU and the EU are likely to increase – at different rates – over the coming years.

At the heart of this question are two concepts well known to national accountants: the domestic concept and the national concept.

The original 1995 framework Regulation anticipated this question by including the following:

*“The HICP shall be based on the prices of goods and services available for purchase in the economic territory of the Member State . . .”* (Art 3)

In principle, a price statistician has two choices. First, he can choose to measure the changes in prices faced by consumers normally resident in the country – in which case the prices paid by these consumers when they are outside the country also have to be included in the index. This is known as the “national” concept of measurement.

Alternatively, he can choose to measure the changes in prices faced by all consumers in the country itself – in which case one must measure only domestic prices, but the weights applied must relate to the total consumption within the country, whether by the resident population or by foreign visitors. This is known as the “domestic” concept of measurement.

There are both theoretical and practical aspects to this question. On a practical level, it would obviously be difficult, if not impossible, for a national price statistician to measure price changes in other countries where consumption is made by residents of his own country. In practice, he would have to use the CPIs of a range of foreign countries – many of which, of course, would not be in the EU.

But theoretically (fortunately) this approach is not called for. National inflation should surely measure national price changes, even if some of them are faced by foreign visitors. In the Single Market, this must even more be the correct approach. But there are some political difficulties. Those countries with a large tourism industry may decide that it would be reasonable for hotels in tourist districts to increase their prices considerably more than average, possibly to take advantage of a fall in the exchange rate. Such countries may think it undesirable to include these price increases in their national CPI if the domestic population is not generally affected.

There is another aspect to this question which relates to the average HICP for the Monetary Union – the Monetary Union Index of Consumer Prices (MUICP). If we are to have an inflation index for the MU which can be compared with inflation in other countries or economic blocs, such as the USA, we must be sure that (a) we are covering the whole of consumer price inflation within the MU, and that (b) we are not double-counting any of it. If we did not have a rule on using the domestic concept for the HICPs, we would not be sure of avoiding these problems. For one country might include in its HICP the expenditure of its residents while in another EU country, while the second country might include the same expenditure. Conversely, one country might exclude the expenditure of foreign visitors, while some (or all) of the others also exclude the same expenditure. We would then have “black holes” of consumer expenditure dotted about the EU. The regulation on this topic therefore specifies the domestic concept.

## **Quality adjustment**

An extremely important technical issue concerns quality adjustment. Probably most price statisticians are convinced that the question of quality adjustment is not only the most difficult question facing them, but that it has potentially the biggest single effect on the accuracy of the index.

The US Boskin Report<sup>6</sup> made estimates of the size of the quality adjustment problem in the USA. It put a figure of 0.6% on it – in fact an upwards bias. This estimate has been strongly contested in many quarters, and indeed some experts would argue that there may be no upward bias due to quality adjustment at all.

What exactly is quality adjustment? A CPI tries to measure the changing prices of identical products from month to month. You have to compare like with like. So if the model of a car whose price is being tracked is replaced with a new model which now has passenger airbags - and costs more – what is the statistician to do? Apparently the new model has more functionality than the previous one, so the higher price may simply reflect this. There may also be an element of a “real” price increase which the manufacturer has applied.

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<sup>6</sup> *Boskin, M.J. et al., “Towards a more accurate measure of the cost of living”, Dec. 1996*

There are two extreme courses which can be followed. You could assume that the whole of the price rise is accounted for by the change in “quality” (we use that word instead of a change in “specification”, which is rather more objective and scientific). In that case, the CPI is unchanged. Alternatively, you could assume that all of the price increase was in fact a real price change, and that overall there had been no quality change at all. In practice, the true answer is usually likely to lie somewhere in between these two extremes.

The Boskin argument was that in many sectors, particularly high-tech sectors such as personal computers and advanced medical services – statisticians were failing to allow sufficiently – or even at all – for the large changes in quality which are taking place.

However, the Boskin Report focussed on sectors where quality adjustments appeared to lead towards an upwards bias in the US CPI. But there are other sectors where a bias in the opposite direction would seem more likely. A prime example is clothing. Many countries make quality adjustments in clothing, and it is possible to hypothesise on how this may lead towards a downwards bias in practice.

Consider the following scene. A price collector walks into a clothing store, expecting to price the usual ladies’ blouse. But this month the style has changed and the shop is giving maximum publicity to the new style – which costs 5% more than the old, which has disappeared from the market. The price collector asks the advice of the store manager, who points out that the styling and finish of the new version is superior to that of the old. He may advise the collector to take no notice of the new price but in fact to consider the new garment offers better value for money than the old one.

The price collector – who is not necessarily an expert in clothing – is duly grateful for this advice, and makes a comment against the new price “Accept this as a no-change value” – which the statistics office accepts.

So the CPI shows no increase in price, when in reality the manufacturer has concealed a price increase of 5% by altering the styling of the garment. There was an upwards quality adjustment when there should have been none. The sub-index for clothing is consequently biased downwards. It is virtually certain that scenarios like this exist, because it is known from studies in some countries that over the long term the implied quality increase in the clothing sector is far higher than consumers would accept as reasonable.

It should not be forgotten that the weight for clothing in the average HICP is roughly 25 times the weight for personal computers and related goods. So some scepticism may be called for when one reads some estimates of upward bias of CPIs due to insufficient quality adjustments. It could equally well be downwards.



## **E. MONETARY UNION INDEX OF CONSUMER PRICES (MUICP)**

Most of Eurostat's work in the years between 1993 and 1996 was devoted to the idea of producing national HICPs which were comparable with one another, in order to satisfy the Maastricht convergence criterion on price stability. However, the framework regulation did provide for an index for the EU as a whole (the European Index of Consumer Prices (EICP)) and the eurozone (MUICP). Eurostat had been publishing the EICP since the HICPs were launched in March 1997, but as soon as the first-wave members of the MU were announced in May 1998 a Press Release was immediately published giving the MUICP series. The European Monetary Institute (EMI) (the precursor of the ECB) had already indicated very clearly that this index would be used as the main tool by the future ECB for assessing price stability in the eurozone, and, as noted in Section A, an explicit target was set by the ECB in October 1998.

The "HICP for the Euro area" (or MUICP) is a weighted average of the individual HICPs of the 11 Member States in the eurozone. Country weights are calculated every year. They are based on each country's share of private final domestic consumption expenditure in the EMU total (National Accounts aggregate a51).

The weights currently being used, from the January 1999 index on, are derived from 1997 national accounts, price-updated to December 1998, using the December 1998 HICPs for the countries concerned.

In practice, the weights for the 3 years so far used have differed only very slightly, and probably not enough to affect the final index at the 1 decimal place level.

A decision has been made on a strategy for handling the inclusion of new Member States in the eurozone. Assuming this will happen in a January, an index link will be made in the previous December. There will be no attempt made to continue separate series for the EUR-11 after it becomes the EUR-12, EUR-13 etc.

At the sub-index level, of which there are over 100, the country weights are also allocated according to the same method. Each Member State is required by Regulation to provide the weights at each published level of the HICP. Users are thus able to analyse sources of inflationary pressure by comparing subindices between the different members of the eurozone- and indeed the EU generally.

## **F. TIMING OF PUBLICATION OF HICPs**

Eurostat has been working very hard with the Member States to try to speed up the monthly publication schedule. The framework Council Regulation requires Member States to send the indices to Eurostat within 30 days of the end of the index month. In turn, Eurostat is required to publish the indices and the various averages within a further five working days. So in practice this has meant an ultimate deadline of about 5 weeks after the end of the index month. As always, of course, the actual timing is dictated by the slowest reporting country. In practice, during recent months Eurostat has been publishing generally about the end of the month following the index month.

Given the pressure by users for ever more timely indicators, Eurostat is looking for further cuts in the time lag, both in Member States and in the Commission. As a result, the 1999 timetable is generally (16+3) days instead of the (30+5) laid down in the Regulation – an improvement of more than 2 weeks in the monthly publication. Yet further improvements are being sought for 2000.

## **G. FUTURE DEVELOPMENTS**

Despite the HICP achievements so far, much still remains to be done. These tasks can be grouped under four headings:

- Monitoring compliance and improving the quality of HICPs
- Improving comparability through further harmonisation.
- Preparation for EU enlargement.
- Consolidation and documentation.

### **Monitoring compliance and improving the quality of HICPs**

The purpose of monitoring compliance with the HICP regulations and guidelines is to ensure that HICPs meet the legal requirements and also to assure users that this is indeed being achieved. The process of compliance monitoring can be expected to result in improvements in the general quality level of HICPs through an iterative process. Following a decision of the Directors-General of the EU national statistical institutes, the methods used will be based on a “Total Quality Management” (TQM) approach.

Eurostat as a whole is committed to a general programme of quality improvement, both in its processes and its outputs. The momentum already achieved by the HICP harmonisation project will not be lost, as Eurostat and its collaborators in the national statistical offices continue to seek improvements in all aspects of the quality of the HICPs.

## **Improving comparability through further harmonisation.**

There are still several areas of non-comparability on which harmonisation is needed. These include:

The timing of inclusion of prices into the index

The timing of monthly price collection

The treatment of banking services

The treatment of seasonal items

Owner-occupied housing.

The Working Party has a programme of work that will lead to further proposals for action in these and other areas.

## **Preparation for EU enlargement.**

Eurostat's price comparisons unit has been in close contact with the 11 accession countries for over two years. The bulk of the development work is being achieved by means of a PHARE pilot project on price statistics, which includes a programme of technical assistance missions by EU experts to the PHARE countries, the secondment of trainees to national statistical offices, and the organisation of workshops. In addition, the accession countries attend the HICP Working Parties, and there is a rolling programme of secondments of PHARE country staff to Eurostat. An action plan for producing HICPs has recently been agreed with the accession countries. They will provide these in two stages: January 2000, and January 2001. By then, all the accession countries will be producing monthly HICPs according to the same methodology as the rest of the EU. This should give sufficient time for the Commission and the ECB to make the necessary assessments of price stability before the final negotiations on entry take place.

## **Consolidation and documentation.**

There are currently 11 legal acts and formal guidelines, with more in the pipeline. There are a number of inconsistencies of nomenclature and some other discrepancies caused mainly by the fact that they have been produced at a rapid rate in order to meet the stringent user requirements. So it is Eurostat's intention to consolidate these documents, and at the same time to make improvements in the light of knowledge gained since the original acts were adopted.

An HICP manual is also planned. This will be focussed on the various legal acts, and will explain why certain approaches were adopted, and why others were not. There will also be a glossary of terms.

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## Abbreviations used

HICP	Harmonized index of consumer prices
MUICP	Monetary Union Index of Consumer Prices
EICP	European Index of Consumer Prices (EU15)
ECB	European Central Bank
EMI	European Monetary Institute
ESCB	European System of Central Banks
CPI	Consumer Price Index
EC	European Communities
EU	European Union
HBS	Household Budget Survey
HFMCE	Household Final Monetary Consumption Expenditure
ESA	European System of Accounts
VAT	Value Added Tax
ILO	International Labour Organisation
MU	Monetary Union (of the EU)
TQM	Total Quality Management
PHARE	Refers to EU's multi-country programme for certain pre-accession countries in E Europe