

## ARTICLES

# THE HARMONISED INDEX OF CONSUMER PRICES: CONCEPT, PROPERTIES AND EXPERIENCE TO DATE



*The reliability of consumer price indices in general, and of the Harmonised Index of Consumer Prices (HICP) in particular, is crucial for economic decisions. Consumer price indices are widely used as economic indicators, not only by the ECB but also by the European Commission, governments, businesses and households. Initially created for the assessment of price convergence during the early stages of Economic and Monetary Union, the HICP is an accurate, comprehensive and timely indicator of consumer price inflation that is comparable across all EU countries. Within the ECB's monetary policy strategy, the euro area HICP is the price index used to assess price stability. Despite the recent discrepancy between opinion survey results on consumers' inflation perceptions and actual HICP inflation, there is no evidence that the HICP understates (or overstates) consumer price inflation. Nevertheless, the process of harmonisation of the HICP across EU countries is not yet complete. The main priorities for further improvement concern the issues of quality adjustment and the inclusion of expenditure on owner-occupied housing.*

### I A HARMONISED MEASURE OF CONSUMER PRICE INFLATION

There is a widespread consensus that inflation entails substantial costs for the general public. High and volatile inflation generates significant uncertainty about the future. It increases the complexity of evaluating the price of financial assets and their associated risks. Furthermore, it distorts consumption and investment decisions, and generates higher transaction costs. It may also lead to an unanticipated redistribution of income and wealth from creditors to debtors and amongst recipients of different kinds of income. It is generally agreed that inflation has a significant negative impact on economic growth and welfare. This common belief, anchored in the general public's opinion, is supported by a substantial body of literature that demonstrates the harmful effects of inflation on economic growth.<sup>1</sup>

Widespread concerns about inflation call for a tool to accurately measure it. A consumer price index (CPI) can fulfil this role. By measuring over time the change in prices of goods and services purchased by households for consumption purposes, it indicates the change in purchasing power from the point of view of the consumer. As such, it is a standard benchmark used by economic agents in financial decisions or in contracts where developments in the price level have to be taken

into account. Pensions, government benefit payments, bonds, wages, leases and rental agreements, for example, are often directly or indirectly linked to consumer price developments. In the EU Member States, Harmonised Indices of Consumer Prices (HICPs) have been developed, allowing the compilation of euro area and EU aggregates. They provide a complete set of comparable and high-quality consumer price indices.

### THE ROLE OF THE HICP IN THE ECB'S MONETARY POLICY STRATEGY

Within its monetary policy strategy, the ECB has given the HICP a prominent role by defining its mandate to maintain price stability in terms of this particular index. The ECB aims to ensure price stability since it is essential to avoid the harmful effects of inflation and thereby to foster the most efficient allocation of resources. This is the best contribution monetary policy can make to keep the economy on the smoothest possible track to long-lasting sustainable economic growth and job creation.<sup>2</sup> The ECB defines price stability as a year-on-year increase in the HICP for the euro area of

<sup>1</sup> See also G. Camba-Méndez, J. Garcia and D. Rodriguez-Palenzuela, "Relevant economic issues concerning the optimal rate of inflation" in O. Issing (ed.), *Background studies for the ECB's evaluation of its monetary policy strategy*, European Central Bank, Frankfurt, 2003.

<sup>2</sup> See the conference proceedings, entitled "Why price stability?", of the First ECB Central Banking Conference, November 2000.

“below 2%”. The Governing Council of the ECB has also stated that it aims to keep inflation below, but close to 2%. This aim provides an adequate positive margin to avoid the risks of deflation. It also ensures a margin sufficient to address the implications of inflation differentials across the euro area, so that individual countries may not have to structurally live with too low rates of inflation, or even deflation. Furthermore, it takes into account the possibility that the HICP may slightly overstate the true rate of inflation as a result of a positive bias in the measurement of price changes, although – as discussed below – this bias is likely to be very small.

#### **THE HICP AS AN INDICATOR OF CONVERGENCE**

The HICP also plays a role in the monitoring of convergence of price developments. According to the Maastricht Treaty, one of the criteria to guide decisions on which countries qualify for the adoption of the euro is that average annual inflation must not exceed the HICP inflation rate of, at most, the three best-performing Member States by more than 1.5 percentage points. This criterion calls for a comparable price index for all EU countries. For non-euro area EU countries, the HICP is therefore a key indicator in assessing their suitability for adoption of the single currency.

For all these purposes, the HICP should embody a number of essential properties, such as a broad coverage of consumer expenditure, credibility, accuracy, reliability, timeliness and high frequency. The remainder of this article presents and assesses the quality of the HICP as a measure of aggregate price developments. Section 2 reviews the conceptual framework and properties of the HICP. Section 3 describes the analysis of the individual HICP components in assessing inflation developments. Section 4 outlines priorities for further improvement and Section 5 concludes.

## **2 THE CONCEPTUAL FRAMEWORK OF THE HICP AND ITS PROPERTIES**

### **2.1 HISTORY OF THE HICP'S DEVELOPMENT**

Work on the HICP started in 1993 in order to provide comparable measures for the assessment of convergence in the run-up to the start of Stage Three of EMU, since the national CPIs of EU countries were not comparable. The first achievement was the adoption of the framework Council Regulation (EC) No 2494/95 concerning harmonized indices of consumer prices in 1995. According to this regulation, the European Commission (Eurostat) is responsible for “the creation of common statistical standards for consumer price indices”. The harmonisation was supported by three further EU Council regulations and eight European Commission regulations adopted between 1996 and 2001.<sup>3</sup> These were aimed at ensuring comparability across countries and promoting high and up-to-date standards for price statistics that follow international recommendations,<sup>4</sup> but leave all responsibility for collecting price data with the national statistical institutes.

In 1996 the first (interim) HICPs with a common initial coverage of goods and services were released. Moreover, rules for the sampling of products and outlets, and for the timely inclusion of new products, were agreed. In 1997 further work was conducted to ensure that HICPs reflect up-to-date consumption patterns. As a minimum standard, it was agreed that HICP expenditure weights must refer to a period that is no more than seven years before the reporting year. In addition, Member States have to review these weights annually and update them if there are important changes in the consumption pattern. In 1999 HICP

<sup>3</sup> All regulations, guidelines, a short user guide and additional information on the HICP can be found on the European Commission's website (<http://forum.europa.eu.int/Public/irc/dsis/hicop/library>).

<sup>4</sup> For further information on international standards, see also ILO, IMF, OECD, UNECE, Eurostat and the World Bank, “Consumer price index manual: theory and practice”, 2004.

standards for tariff prices and insurance services were set.

Major progress in harmonisation was made in 2000 and 2001. The coverage of the HICP was extended to include the areas of health, education and social protection. At the same time, the population and geographical coverage of the HICP was harmonised to cover all household consumption expenditure in the territory of a country. Moreover, specific requirements for a harmonised measurement of sales prices and financial services prices were put into practice. Since then, harmonisation work has continued, in particular in the field of the quality adjustment of price indices (see Section 4).

## 2.2 THE HICP CONCEPT AND DEFINITION

The HICP aims to quantify developments in “the prices of goods and services available for purchase in the economic territory of the Member State for the purposes of directly satisfying the consumer needs”,<sup>5</sup> thereby covering “household final monetary consumption expenditure”. This concept has important implications, some of which can help to explain the differences between the HICP and national CPIs.

The HICP covers goods and services bought by households in a country, notwithstanding their nationality, residence, income or other socio-economic features. By contrast, many CPIs cover only expenditure by resident households. Moreover, prices fully enter the HICP at the time when goods and services are actually acquired. This acquisition concept differs from the concept for some national CPIs that aim to measure the price of goods and services as they are used. This can make a significant difference, in particular for items that are consumed over long time periods (especially owner-occupied dwellings; see also Box 2).

The borderline chosen between government consumption expenditure and private household expenditure is in line with the European System

of Accounts 1995 (ESA 95). Goods and services provided by government to individual households as social transfers in kind (e.g. healthcare and education) are not included in the HICP, although they might eventually be financed indirectly by households, e.g. in the form of compulsory contributions to a public healthcare system. However, so-called “out-of-pocket” expenditure by households, including flat rates or price shares paid directly by a benefiting household for goods and services provided as transfers in kind, are included in the HICP. The treatment of these items varies considerably in national CPIs. It was also decided that the introduction of direct consumer payments for items which were previously provided as transfers in kind, and therefore free of charge for the consumer, should be measured as price increases in the HICP. Conversely, the elimination of a consumer payment and its replacement with a transfer in kind would result in a price decline.<sup>6</sup> This underlines the need to analyse HICP developments in connection with other price indicators, such as government consumption and the GDP deflator, since a consumer price index – despite its broad coverage – only sheds light on a certain part of final demand in the economy.

Notwithstanding these issues, the HICP has many conceptual similarities to the national CPIs. They include non-durable and durable goods as well as services and cover daily expenditure (e.g. the purchase of bread), regular expenditure (e.g. monthly rent payments) and infrequent expenditure (e.g. the purchase of a car). The prices are those purchase prices observed in outlets and include VAT and other indirect taxes.

The HICP measures the average price changes for goods and services by comparing the reporting

<sup>5</sup> Council Regulation (EC) No 2494/95, Article 3.

<sup>6</sup> An example is the German healthcare reform of January 2004, which increased the German HICP inflation rate from 0.6% to 1.2% in that month. The opposite example is the abolishment of the TV licence fees in Belgium (2002-03) and in the Netherlands (2000), which lowered the national HICP inflation rates by 0.3 percentage point and 0.6 percentage point respectively.

period's and a reference period's expenditures for a representative basket. This basket and its expenditure shares are kept fixed over (at least) one year. This means that, during this period, the HICP's development reflects price changes which are not affected by varying consumption patterns. To be representative of the recent expenditure patterns of consumers, the expenditure shares have to be updated at sufficiently frequent intervals. A Laspeyres-type index is used for almost all existing consumer price indices.

## 2.3 THE COMPILATION OF THE HICP

### SAMPLING AND PRICE COLLECTION

National statistical institutes collect the prices of a sample of goods and services on a monthly basis, selected to represent all products bought by households for consumption purposes. Prices for several hundred predefined consumer goods and services are surveyed. The samples include several prices for each item, namely different variants of each item in different outlets and in different regions. For instance, price statisticians collect prices for computers not only in computer shops, but also in supermarkets, from mail order offers, or from internet suppliers. Moreover, different product variants such as desktop computers and laptops are considered. In total, HICPs are derived from around 1.4 million individual prices collected each month in the euro area.

### CALCULATING PRICE CHANGES

The HICP is aimed at measuring "pure" price changes over time. This requires the comparison of the current price of a product with the price of the same product in the reference period. Whenever a product's characteristics (e.g. package size, technical performance) change over time, observed prices are adjusted for these differences in the product's specifications or quality in order to derive the pure price movement. For quality adjustment, national statistical institutes use several methods, for example, methods based on expert judgments, regression techniques ("hedonic methods") or methods that derive

estimates of the pure price change from those of similar products that are available in unchanged quality. While the effect of quality changes is usually small for many items in the HICP (e.g. butter), it can be large for some items (e.g. cars and computers). A harmonised approach to quality adjustment is therefore crucial.

### COMPILING THE INDEX

The HICP for each euro area country is calculated as a weighted average of price indices for numerous product groups, using the respective shares of each group in the household expenditure on goods and services covered by the HICP as weights. The information used to calculate product group weights in the HICP is mainly collected via household budget surveys and cross-checked with information from other sources (e.g. tax revenue statistics, national accounts). It is representative of average household expenditure at the national level, thereby capturing for each country national consumption habits which may depend on lifestyles, cultural traditions or other factors (e.g. product availability). In the final step, the HICP for the euro area as a whole is calculated as an average of the national HICPs for the 12 euro area countries, weighted by their relative household consumption expenditure shares in the euro area total. Table 1 gives an overview of the expenditure shares, broken down by euro area country and by main product group, that are currently used to compile 2005 HICP figures.

At the euro area level, the most important groups are food, housing and transport, each covering around one-sixth of total consumption. National weights for main expenditure groups often differ significantly from euro area average expenditure shares. This reflects both differences in consumer preferences and price level differences across countries. Some of the larger differences in the weights are explained by the HICP concept. For example, the high expenditure share for services provided by restaurants and hotels in

**Table 1 Euro area country and main product weights in the HICP (2005)**

(as a percentage of total HICP)

	BE	DE	GR	ES	FR	IE	IT	LU	NL	AT	PT	FI	Euro area
<b>Euro area share</b>	<b>3.3</b>	<b>29.0</b>	<b>2.7</b>	<b>11.4</b>	<b>20.7</b>	<b>1.3</b>	<b>19.2</b>	<b>0.3</b>	<b>5.2</b>	<b>3.1</b>	<b>2.1</b>	<b>1.6</b>	<b>100</b>
<b>HICP weights</b>													
Food and non-alcoholic beverages	16.8	11.5	18.0	22.1	16.9	14.5	16.6	10.6	12.1	13.0	18.5	15.8	<b>15.5</b>
Alcoholic beverages and tobacco	3.4	5.0	5.1	3.8	4.0	8.8	3.0	14.9	4.0	3.1	3.0	5.7	<b>4.2</b>
Clothing and footwear	6.5	5.9	12.2	9.7	5.9	4.5	10.6	5.4	6.1	6.3	6.8	5.4	<b>7.4</b>
Housing, water, electricity, gas and other fuels	16.1	21.8	9.5	10.2	14.5	8.5	9.7	8.7	16.1	14.6	9.4	15.2	<b>15.0</b>
Furnishing, household equipment and routine maintenance of the house	7.5	7.4	7.0	5.8	6.4	4.2	10.6	9.6	8.2	7.4	7.6	5.6	<b>7.6</b>
Health	3.9	4.7	5.6	2.4	4.2	3.1	3.9	1.4	5.1	4.1	5.1	5.2	<b>4.1</b>
Transport	13.5	15.2	13.4	13.8	17.8	14.0	14.1	22.0	14.2	15.1	18.9	16.3	<b>15.3</b>
Communication	2.9	2.5	2.3	2.1	3.2	2.0	3.2	1.8	3.6	2.7	3.0	3.1	<b>2.8</b>
Recreation and culture	13.2	11.5	4.5	6.8	9.6	11.7	7.3	8.5	11.3	11.2	4.8	11.5	<b>9.5</b>
Education	0.5	0.8	2.0	1.8	0.5	1.9	1.1	0.4	0.7	1.0	1.6	0.7	<b>1.0</b>
Restaurants and hotels	8.9	5.5	14.9	16.4	7.3	20.7	11.3	8.7	7.0	14.7	15.4	8.7	<b>9.5</b>
Miscellaneous goods and services	6.9	8.1	5.5	5.1	9.8	6.1	8.7	8.1	11.7	6.8	6.1	6.9	<b>8.2</b>

Source: Eurostat.

the HICPs of Greece, Spain, Ireland, Austria and Portugal mirrors expenditure of foreign tourists which is covered by those HICPs. The differences in weights for housing reflect the fact that the HICP only covers rental payments, which vary depending on the importance of national rental markets, but not the expenditure by owner-occupiers (see Box 2). The differences for health and education reflect the varying degree to which these services are provided as transfers in kind from the

government rather than being directly paid for by consumers.

The HICP's consumption patterns reflect average household expenditure. However, depending on different consumption patterns, the inflation faced by individuals or groups of households can differ from this average. The possible impact of such differences is illustrated in Box 1.

**Box 1****SPECIFIC BASKETS OF CONSUMER GOODS AND SERVICES AND MEASURED INFLATION**

In discussions on inflation measurement and perceptions, differences between the baskets used for official consumer price statistics and those of individual consumers and specific groups of consumers have been highlighted. This box simulates the different impact on inflation of alternative baskets and expenditure patterns, and compares these with euro area HICP inflation.

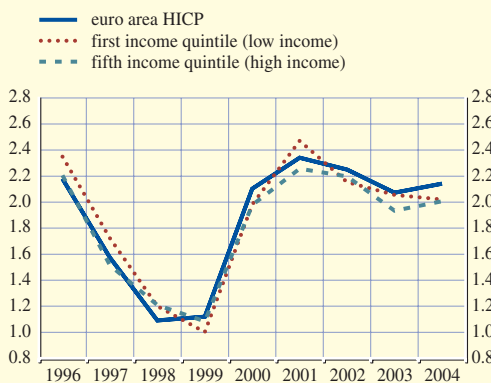
Consumer inflation is calculated for four distinct hypothetical household types. For reasons of data availability, these calculations were made at a higher level of aggregation than usually applied for HICP calculations, and expenditure weights were kept fixed over the comparison period. It must be kept in mind that these assumptions to some extent limit the quality of the simulations.

The expenditure shares for the first two household types reflect consumption habits of different income groups. They were compiled from the 1999 Household Budget Survey data available from

Eurostat at the euro area level. The published data on the structure of consumption expenditure is grouped into income quintiles.<sup>1</sup> The first (lowest income) and the fifth (highest income) quintiles were considered for the calculation of the two specific households' inflation rates, assuming that consumption habits differ most between these two income groups. Differences in expenditure shares are important for some items, e.g. the consumption of food and non-alcoholic beverages by low-income households represents 21.1% of their expenditure basket, compared with only 13.2% for high-income households. The results of the simulation show that, between 1996 and 2004, the differences in the consumption shares led to slight differences of between 0.0 and 0.2 percentage point per year in the households' inflation rates. However, on average over the whole period, these differences broadly cancelled each other out (see Chart A).

**Chart A Lower and higher income household inflation**

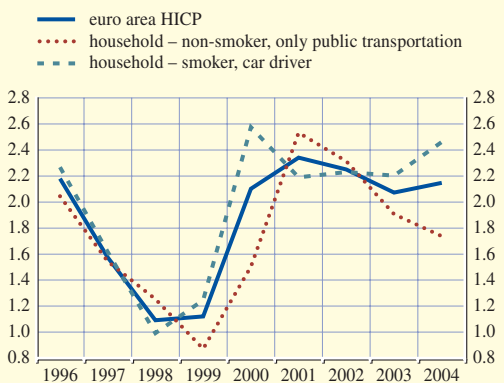
(annual percentage change)



Sources: Eurostat and ECB calculations.

**Chart B Specific household's inflation**

(annual percentage change)



Sources: Eurostat and ECB calculations.

A further example shows the potential effect on household inflation of selected products for which individual consumption preferences typically differ significantly. The effects of different preferences as regards tobacco and transportation were simulated. One household was assumed to be non-smoker and to use only public transport (i.e. no expenditure on private cars, repairs or petrol, but double the average expenditure on public transport). A second household type was assumed to be smoker and to always drive a car (i.e. no public transport used, but double the average expenditure on tobacco and private transportation items). For the year 2004, in which official annual euro area HICP inflation was 2.1%, the first household type would have experienced annual average inflation of 1.7%, while that for the second household type would have been 2.5% (see Chart B).

Different consumption patterns yield different developments in purchasing power for specific types of household only if the price changes of the products concerned differ from the average price change recorded for the all-item index. This has been the case for the items selected here due, in particular, to tobacco tax and petrol price increases in recent years. Such large differences are, however, not typical for many other items of consumer expenditure, and other variations in the composition of specific baskets may be expected to lead to smaller differences between the inflation experience of individual households and average inflation as measured by the HICP.

<sup>1</sup> Ordered income ranges, each covered by one-fifth of the total population of households.

### DATA PUBLICATION AND AVAILABILITY

Monthly HICPs are available for 29 European countries (the EU Member States plus Bulgaria, Romania, Iceland and Norway). Since May 1998, the euro area HICP has been published by Eurostat in addition to the result for the EU. Furthermore, Eurostat publishes a flash estimate of the euro area HICP. This is based on the HICP estimates for Germany, Spain and Italy, on national CPI data for Belgium, as well as on early information on energy price developments. It is generally published on the last day of the reference month, while the full results for the euro area HICP are released about 18 days after the end of the reference month. These releases have proved to be reliable; revisions have been rare and small.

The HICPs are published according to the Classification of Individual Consumption by Purpose (COICOP/HICP) and also for additional sub-aggregates of goods and services (e.g. processed and unprocessed food, energy). In total, about 160 sub-indices are available for EU and euro area aggregates, and for each of the 29 countries. HICP data and rates of change are available on Eurostat's website.<sup>7</sup> From these data, the ECB compiles seasonally adjusted euro area HICPs (see Table 5.1 of the "Euro area statistics" section and the ECB's website).

### 2.4 ACCURACY AND MEASUREMENT ISSUES

Research on accuracy and the potential biases of consumer price indices typically distinguishes four main measurement issues:

- Baskets and expenditure weights are kept constant over a certain period (usually between one and five years). However, the longer the weights and baskets are kept fixed, the less representative they are of current consumer expenditure.
- New products' prices – in particular for electronic household equipment – tend to

decrease after these products enter the market. When new products are not covered in a timely manner, part of this price decrease is not taken into account. By contrast, "old" products whose market share has become insignificant may be offered at reduced sales prices. If such outdated products are kept in the sample unduly long, the index could become biased downwards.

- Identifying the effect of quality changes on price changes is difficult. If the methods for quality adjustment are inaccurate, this may lead to an under- or over-adjustment for quality changes. The direction and size of both the quality change and any possible quality change bias in the index may differ across items and countries.
- New outlets may offer goods and services at lower prices. If shifts in the outlet composition are not appropriately reflected in the sample, this may lead to an overstatement of price movements.

It should be noted that the impact of these factors may vary over time and may depend, for example, on technical innovation and changes in the outlet structure. Theory and research suggest that, on balance, these factors may lead to a very limited upward bias in existing consumer price indices. Bearing in mind these measurement issues, several of the previously described HICP methods take explicit account of potential sources of bias, in particular the rules for updating weights, for including new products and for quality adjustment. Nevertheless, further work on improving the quality adjustment methods used for HICPs needs to be carried out (see Section 4).

<sup>7</sup> <http://epp.eurostat.ec.eu.int>

### 3 HICP DEVELOPMENTS IN THE EURO AREA: EXPERIENCE TO DATE

The ECB regularly monitors and analyses HICP developments. After a sustained decline driven by the convergence process in the run-up to Stage Three of EMU throughout the 1990s, euro area inflation started to rise, from an annual average of 1.1% in 1999 to peak around 2.3% on average per year in 2001 and 2002. It has since fluctuated around 2.0% (see Chart 1).

#### DEVELOPMENTS IN THE MAIN HICP COMPONENTS

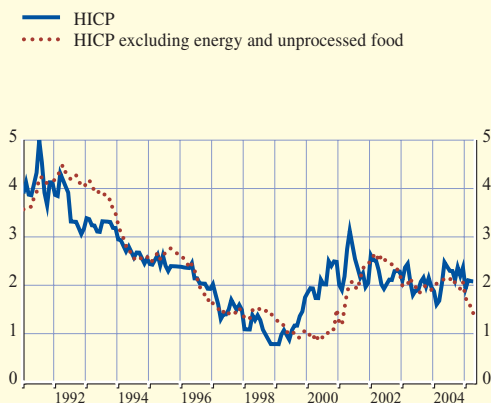
For the purposes of economic analysis, the HICP can usefully be broken down into five main components: energy (i.e. electricity, gas, liquid and solid fuels and lubricants, heating), unprocessed food (i.e. meat, fish, fresh fruit and vegetables), processed food (including bread, milk, beverages and tobacco), non-energy industrial goods (including clothing and shoes, furniture, household appliances, medical products, cars, PCs and TVs) and services (including rents and repairs, as well as cultural, recreational and medical services). Energy and unprocessed food prices are known for being significantly more volatile than other

categories of prices, as they are determined in markets where supply shocks can play a major role. The volatility of the unprocessed food component, for example, is often linked to the impact of weather conditions on harvests.

The detailed examination of contributions from the five components of the HICP highlights an unusual clustering of significant shocks between 2000 and 2004 that mainly affected the most volatile components (see Chart 2). In 2000, for example, the contribution of the energy component to headline HICP reached 1.1 percentage points, well above its average historical contribution (see Table 2). This reflected a 200% increase in US dollar oil prices over the year, amplified by a 30% depreciation of the euro against the US dollar. As a result of these large fluctuations in oil prices, the volatility of the energy component has increased significantly since 1999. Also, Chart 2 illustrates the exceptional pick-up in food prices in 2001 that was mainly driven by health concerns related to the cases of Bovine Spongiform Encephalopathy (BSE) and the outbreak of foot-and-mouth disease in a number of euro area countries. Finally, in 2002, the contribution of services prices increased temporarily (in particular, that of recreational

Chart 1 Euro area HICP

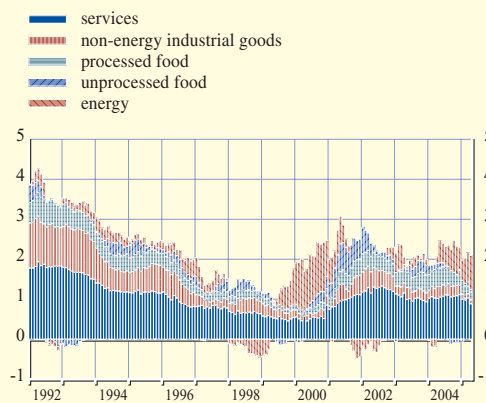
(annual percentage changes)



Sources: Eurostat and ECB calculations.  
Note: Data prior to 1996 are estimated on the basis of national CPIs.

Chart 2 Contributions to HICP inflation

(in percentage points of HICP)



Sources: Eurostat and ECB calculations.



Table 2 Basic statistical data on the main euro area HICP components

Description	HICP weights (%)	Average (annual percentage changes)		Standard deviation (percentage points)		Average contribution to changes in the HICP (percentage points)	
		2005	1992-1998	1999-2004	1992-1998	1999-2004	1992-1998
	Energy	8.6	1.5	4.2	2.2	5.5	0.2
Unprocessed food	7.6	1.4	2.4	1.6	2.8	0.2	0.2
Processed food	12.0	2.6	2.5	1.0	1.1	0.3	0.3
Non-energy industrial goods	30.8	1.8	0.8	0.9	0.4	0.5	0.3
Services	41.0	3.6	2.3	1.3	0.6	1.1	0.9
HICP excluding energy and unprocessed food	83.8	2.8	1.8	1.1	0.6	1.9	1.5
Total HICP	100.0	2.4	2.0	0.9	0.5	-	-

Sources: Eurostat and ECB calculations.

Notes: Results prior to 1996 are estimated on the basis of national CPIs. The standard deviation results in 1992-1998 are partly driven by the high volatility of the first year of the sample.

and personal services prices). This may partly be explained by the introduction of euro banknotes and coins, the impact of which has been estimated by Eurostat to have contributed between 0.1 and 0.3 percentage point to the HICP inflation rate in 2002.

Several of the recent shocks to inflation had a direct impact on the HICP inflation rate, generally of a temporary nature, although they may have given rise in some cases to indirect effects on other prices. Some of these shocks were also particularly exceptional in size or unusual (e.g. the oil price increases in 2000 and the BSE crisis in 2001). A more detailed analysis of HICP developments helps to distinguish the impact of volatile and possibly temporary factors from other more general increases in prices which are more relevant for the assessment of the risks to price stability.

#### CONTRIBUTIONS TO THE HICP EXCLUDING UNPROCESSED FOOD AND ENERGY

The annual rate of increase in the HICP excluding the most volatile components (i.e. unprocessed food and energy) can be broken down further into two main contributors: goods prices and services prices.

Chart 3a shows the composition of non-energy goods price inflation since 1997. The

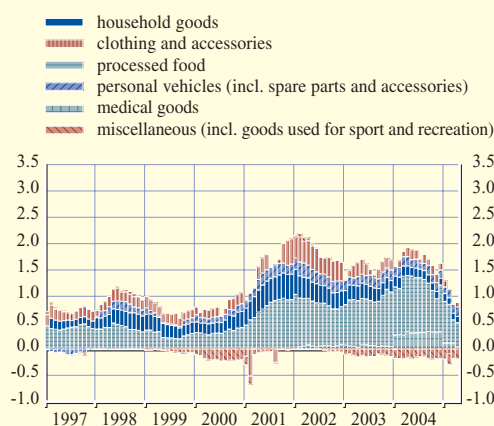
breakdown reveals some interesting developments. Processed food prices were a major component of inflation. The increase in the contribution of processed food prices in 2001 and 2002 is related to the spillover effect of meat price increases on processed food prices in the aftermath of the BSE and foot-and-mouth disease crises. The negative contribution of the miscellaneous component is due to the trend decline in prices of various electronic products (e.g. photographic, information processing and recording equipment). Finally, it is worth noting the increase in the contribution of medical goods prices in 2004, mainly reflecting the implementation of the reforms in the German healthcare system.

Chart 3b, in turn, details the contribution of various categories of services to overall services price inflation. The most important component of services inflation has been recreational and personal services, which include, among others, the prices of sport and cultural services, package holidays, hotels and restaurants, and hairdressers. The contribution of this category rose slightly in 2001 and 2002 and some of this increase was related to the introduction of euro banknotes and coins. In 2003 and 2004, the contribution of recreational and personal services, however, moved gradually back into line with its average

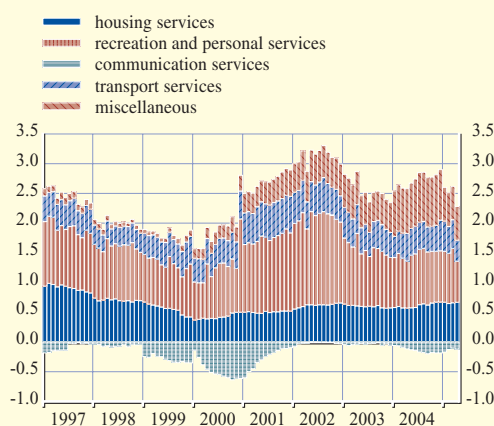
**Chart 3 Contributions to annual HICP inflation excluding energy and unprocessed food**

(in percentage points)

**(a) Contributions to goods price inflation**



**(b) Contributions to services price inflation**



Sources: Eurostat and ECB calculations.

historical contribution. The contribution of housing-related services (e.g. rent, water supply, sewage and refuse collection, repair and maintenance services, and house insurance) has tended to rise very gradually since 2000. Communication services (e.g. telephone services) have made a negative contribution to services inflation, since prices have been on a downward trend, especially in 1999 and 2000. This relates to technological improvements and deregulation which started in 1998. Finally, a noteworthy development in recent years has been the increasing contribution of miscellaneous services prices. This HICP category, which includes financial services, was broadened in 2000 and 2001 to include healthcare, education and social protection services, implying a break in the series. The more disaggregated and complete breakdown of this category, available since 2001, shows an increase in the healthcare component, which is the major contributor to this category.

In sum, an in-depth examination of the HICP provides a detailed picture of inflation, highlighting its composition and underlying trends. In particular, it illustrates the rather unusual clustering of upward exogenous

shocks to headline inflation since 2000, while a closer examination also highlights the negative contribution of some goods (e.g. electronic equipment) and services (e.g. communication). The available product breakdown of the HICP, however, has proved not to be fully sufficient for the analysis in some cases. For example, during the BSE crisis, it would have been useful to be able to distinguish between the price of beef and the prices of other types of meat. Additional euro area HICP data at the product level could thus help to better identify specific reasons for price changes in HICP sub-indices.

#### THE HICP AND INFLATION PERCEPTIONS

Overall, the statistical properties of the HICP, its degree of comparability across euro area countries and the level of possible disaggregation clearly help to provide a coherent picture of inflation. Yet, in 2002, while no drastic change in HICP inflation was observed, the close link that previously existed between consumers' inflation perceptions and actual HICP inflation broke down (see Chart 4). The indicator of inflation perceptions shown in Chart 4 corresponds to the difference between the weighted proportion of

respondents stating that consumer prices have risen “very much”, “quite a bit” and “a little” over the last twelve months and the weighted proportion of respondents stating that consumer prices have fallen or have stayed broadly the same over the same period. Hence, it takes the form of balance statistics and gives qualitative information on perceptions of the directional change in inflation over the past twelve months.

The break in the link between consumers’ inflation perceptions and actual HICP inflation coincided with the introduction of euro banknotes and coins in January 2002 and a number of arguments related to the euro cash changeover have been put forward to explain the sudden rift and its persistence.<sup>8</sup> Consumers can be expected to be well informed about actual price changes from their own personal experience, but the rather sudden loss of traditional points of reference in national currency, together with the difficulties in adapting to the new currency, seem to have played an important role.

In particular, consumers tend to form their inflation perceptions by assigning higher “subjective” weights to small, out-of-pocket and frequent expenditures. A sub-index grouping a selection of some frequently purchased items (e.g. food, transport,

consumption in cafés and restaurants) indeed reveals a somewhat closer relationship with the survey indicators of consumers’ inflation perceptions and, in particular, relatively higher price increases around the time of the cash changeover in January 2002.

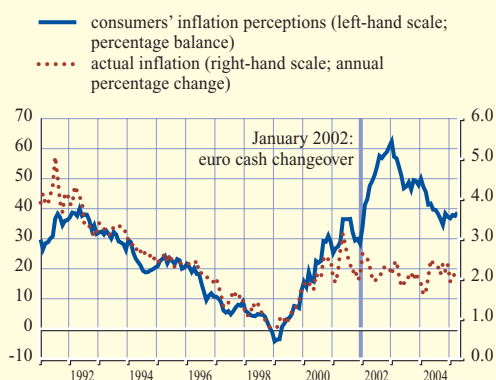
Over time, the public has gradually become more accustomed to the euro. This may explain the subsequent gradual reduction of the gap between inflation perceptions and actual inflation. It is also worth noting that the perception consumers have that inflation is higher than suggested by official statistics is in contrast to experts’ discussions on measurement issues in consumer price statistics, which typically focus on potential upward biases in consumer price indices.

#### 4 PRIORITIES FOR IMPROVING THE HICP FURTHER

There are two main areas on which Eurostat and national statistical institutes are working to improve the HICP further. These are the application of fully harmonised quality adjustment methods and the incorporation of owner-occupied housing expenditure in the consumption basket underlying the HICP.

For the time being, common rules for quality adjustment exist only at a broad level in the form of minimum standards. In many cases, relatively simple methods provide reliable results at reasonable cost. For some goods and services, however, more sophisticated approaches are needed and these usually require larger datasets, including detailed and up-to-date information on changes in product characteristics and market shares. Developing and applying such techniques in a comparable manner across all euro area countries is a further challenge. Therefore, over recent years, Eurostat and the national

Chart 4 Consumers’ inflation perceptions and actual HICP inflation



Sources: European Commission and ECB calculations.

<sup>8</sup> For more details, see the boxes on euro area inflation perceptions in the July 2002, October 2003 and April 2005 issues of the Monthly Bulletin.

statistical institutes have developed more detailed recommendations for the quality adjustment of specific product groups. These cover several high-tech consumer electronic products (e.g. PCs) and other consumer durables and semi-durables (e.g. cars, clothing and books). It is essential that these recommendations are adopted at the EU level and implemented in all euro area countries. This requires a greater degree of harmonisation and coordination of the basic data used for HICPs. New forms of cooperation amongst national statistical institutes, which are currently under discussion, appear to be a

promising option for the future. For example, it is proposed that so-called “Centres of Excellence” would bring together some experienced national statistical institutes to develop comparable methods and take the lead in their implementation in all countries.

A second priority is the inclusion of owner-occupied housing. This component is not easily measured and experts often have different views on whether and, if so, how it should be covered in a consumer price index. More details on this developmental work are given in Box 2.

## Box 2

### TREATMENT OF OWNER-OCCUPIED HOUSING IN THE HICP

The treatment of expenditure on housing by homeowners is one of the most difficult issues in consumer price index compilation. Given the share of this component in consumer expenditure, different methods may lead to significantly different results. Whereas the expenditure of tenants (of which rent is the most important form) is covered by the HICP, most of the expenditure of owner-occupiers on housing, i.e. expenditure by the homeowner for the purchase of the dwelling, is not covered at present.<sup>1</sup> Therefore, the ECB welcomes the ongoing work of Eurostat to include a component for owner-occupied housing in the HICP.

The share of owner occupation differs quite substantially across euro area countries. This is illustrated in the following table, which reports the share of households living in own dwellings, together with the share of rent in HICP expenditure.

#### Shares of owner-occupiers and rent in euro area countries

Country	BE	DE	GR	ES	FR	IE	IT	LU	NL	AT	PT	FI
Share of owner-occupiers (percentage of all households)	69.8	42.6	74.0	84.3	56.1	77.4	72.8	71.8	54.2	57.3	75.7	58.0
Share of rent in HICP expenditure (percentage)	6.4	10.9	3.3	2.6	6.6	2.5	2.7	3.5	7.5	3.9	2.0	7.9

Sources: ECB and Eurostat.

Note: The shares of owner-occupiers refer to 2002 or the most recent year for which data are available. The shares of rent reflect the HICP weights in 2005.

Generally, for euro area countries with high owner-occupier shares, the weight of rent in the national HICP is low (e.g. in Spain and Ireland), while the HICP rent weights are relatively high for countries with a relatively low share of owner-occupiers (e.g. in Germany and the

<sup>1</sup> For both owner-occupiers and tenants, a number of additional housing-related expenditures are included (e.g. refuse collection, heating, regular maintenance).

Netherlands). In the light of these differences, the HICPs for countries with a high rental share tend to capture a larger share of the total housing-related costs that are actually borne by households in those countries. By contrast, the HICPs for countries with a low rental share will tend to miss a large fraction of the actual housing costs borne by households. Therefore, the extension of the HICP's coverage would enhance the index's overall international comparability.

There are several options for dealing with owner-occupied housing, all of which are used in some of the non-harmonised national CPIs. The *use approach* attempts to measure the change in the value of the flow of shelter services consumed by owner-occupiers. One of the variants often used for this is the rent paid by tenants for similar dwellings. In another variant, the cost of the capital tied up in the owned dwelling is measured. The *payment approach* estimates the actual outlays made by owner-occupiers, including mortgage interest payments and redemptions of mortgage loans. Furthermore, several countries have decided to exclude owner-occupied housing from CPI statistics, since the purchase of assets such as dwellings is considered as falling outside the scope of their consumer price index.

Since HICPs aim to measure the change in the prices of goods and services that are acquired by households for consumption purposes, an alternative concept is currently being tested, the *net acquisition approach*. It includes prices on dwellings purchased by households and all related transaction costs, and excludes the land price component, as land is not considered to be a consumption good. Eurostat, in cooperation with national statistical institutes, is currently carrying out a feasibility study for this approach. According to current plans, EU countries will develop appropriate estimates for owner-occupied housing, including suitable dwelling price indices. By 2008, a decision is expected on whether or not to include this component in the official HICP.

In addition to these two main priorities, there are, from the ECB's point of view, a number of further desirable improvements. These include enhanced standards for harmonising the frequency of updating consumption baskets and expenditure shares. A current project is the development of an HICP excluding the impact of changes in indirect taxes. This work is expected to provide a useful supplementary indicator as from 2006, which may be used to further improve the analysis of the impact of changes in taxes on the inflation rate.

Furthermore, a more coordinated release policy for HICPs would be desirable. At the moment, the publication of national HICPs is spread over about two weeks. The ECB welcomes further efforts towards a more timely release of national and European indicators.

## 5 CONCLUSION

Since the HICP plays a key role for all economic agents in the euro area, its quality is of the utmost importance. This article has reviewed the progress made towards providing a sufficiently harmonised consumer price index for all EU countries. The HICP is undoubtedly the best available measure of changes in the prices of goods and services purchased by euro area households. Its coverage of consumption expenditure is comprehensive and its compilation relies on more than a million individual price observations collected every month across all 12 euro area countries. Based on the European standards and in line with international recommendations, national HICPs, are available for all EU countries. No other price indicator in the euro area reaches the degree

of comparability and accuracy that has been achieved for the HICPs.

The HICP's statistical features and comparability have made it a key indicator used by the ECB in its ongoing analysis of inflation developments. Experience has shown that headline HICP was influenced significantly by some transitory changes in relative prices that were not necessarily related to the medium-term inflationary pressures in the economy as a whole. In particular, an unusual number of shocks had an upward impact on overall HICP inflation between 2000 and 2004. The available HICP disaggregation provides a detailed picture, which helps to distinguish contributions of volatile and transitory influences on the HICP from the general trends in overall prices. Despite the recent discrepancy between consumers' inflation perceptions and actual HICP inflation, there is no evidence of a measurement bias in the HICP.

There are two main priorities for the improvement of HICPs: quality adjustment and the extension of coverage to include consumer expenditure on owner-occupied housing. Work on these issues has been under way for several years and implementation of improvements in these areas is a priority for the coming years. Further harmonisation will require close coordination between national statistical institutes and Eurostat.

Finally, it may also be the right time to review the relationship between the HICP and the national CPIs in order to develop a strategic framework for the future. Such a framework could further enhance the transparency, comparability and credibility of consumer price statistics in Europe.