# ARTICLES

# MONETARY POLICY AND INFLATION DIFFERENTIALS IN A HETEROGENEOUS CURRENCY AREA

*This article assesses the relevance of regional divergence within a monetary union for economic policies and the single monetary policy, with a focus on differentials in inflation rates.*

*Inflation differentials are a normal phenomenon in any monetary union. Even in long-established monetary unions like the United States, differences in regional inflation rates are observed. By comparison, national inflation differentials in the euro area are not unusually large.*

*Inflation differentials can be an integral part of the adjustment mechanism resulting from the dispersion of economic developments across the participating countries, a mechanism which in turn reflects the impact of various economic shocks as well as the fact that the economic structures in place vary from country to country. Inflation differentials are, then, the product of an equilibrating adjustment process within a monetary union and, as such, are not only unavoidable, but also desirable.*

*At the same time, lasting inflation differentials in the euro area are, to some extent, also a product of misaligned fiscal policies, diverging wage developments and deep-seated structural inefficiencies such as nominal and real rigidities in product and factor markets. Inflation differentials stemming from such factors need to be addressed by national policies, primarily by structural reforms in labour and product markets aimed at enhancing the relevant country's ability to adapt in the best possible way to continuously changing economic conditions within the monetary union.*

*Monetary policy, by maintaining price stability in the euro area as a whole, contributes to price transparency and helps to facilitate the necessary adjustment of relative prices across the various countries. While limiting changes in relative prices and inflation differentials cannot form an objective for the ECB's monetary policy, it is necessary for the ECB to assess the underlying causes of such differentials. More generally, monitoring national and sectoral developments is key to understanding the underlying trends in the euro area as a whole and formulating the most appropriate monetary policy response. Such monitoring also facilitates the identification of structural barriers that may hamper macroeconomic adjustment in the euro area and thus helps to identify areas in which structural reforms are particularly necessary.*

## 1 INTRODUCTION

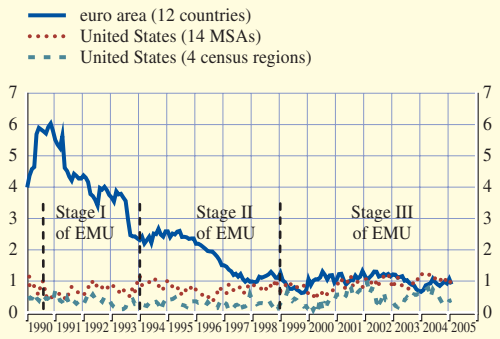
The euro area is a currency union comprising 12 countries and more than 300 million people. The successful adoption of the euro has been as a result of the convergence of currencies towards the best pre-existing benchmarks. Economic and Monetary Union has created conditions conducive to sizeable potential gains in terms of prosperity and welfare for the participating countries. The introduction of a common currency has, in particular, eliminated exchange rate variability among euro area countries, thus reducing transaction costs and enhancing cross-border price transparency, thereby promoting trade and, ultimately, greater economic integration.

Monetary policy is conducted by the Governing Council of the ECB with the primary objective of maintaining price stability in the euro area as a whole. Monetary policy does not, therefore, directly address differences in inflation rates or other economic developments which – because of the variety of economic structures or policies in place – may emerge across the euro area.

While inflation differentials are a normal feature of any monetary union, in the euro area context their presence is combined with institutional and economic characteristics that are, to a large extent, unique, such as limited labour mobility, rigidities in labour and product markets, a lack of significant centralised fiscal transfer mechanisms and decentralised responsibility for

**Chart 1 Dispersion of annual inflation in the euro area, 14 US metropolitan statistical areas (MSAs) and the four US census regions[1)]**

(unweighted standard deviation in percentage points)




Sources: Eurostat, US Bureau of Labor Statistics and ECB calculations.
1) Data up to February 2005.

fiscal and other economic policies. Under these circumstances, differences in price developments across the countries of the euro area have attracted substantial public attention since the introduction of the euro.

This article reviews the evidence on the main features and possible causes of inflation differentials in the euro area and discusses their implications for economic policies and the single monetary policy. The article is structured as follows: Section 2 provides evidence on recent developments in inflation differentials in the euro area, inter alia from a historical perspective; Section 3 presents the main possible explanations for inflation differentials in a currency area; Section 4 discusses the policy implications put forward in the economic debate; Section 5 describes how the ECB takes inflation differentials and, more generally, disaggregated information on sectoral and regional developments into account in the formulation of its monetary policy; and Section 6 draws a number of conclusions.

## 2 EVIDENCE ON INFLATION DIFFERENTIALS IN THE EURO AREA

Chart 1 reports the evolution of inflation dispersion among the countries of the euro area, as measured by the unweighted standard deviation of those countries' annual inflation rates (in terms of the HICP).[1] The degree of inflation dispersion across euro area countries has broadly stabilised since the inception of the euro. Looking back to the start of the 1990s, during Stage One of EMU (July 1990 to December 1993) the degree of inflation dispersion among the 12 EU Member States that now comprise the euro area was characterised by a strong downward trend. The high degree of dispersion observed in the early 1990s was mainly the result of very high levels of inflation in a few countries. During Stage Two (January 1994 to December 1998) the reduction in the degree of inflation dispersion continued. In Stage Three of EMU inflation dispersion reached its lowest level around the second half of 1999. Since then, with the exception of a modest increase over the period 2000-02, the level of inflation dispersion across the euro area has changed very little.[2]

By way of comparison, Chart 1 shows the evolution of the dispersion of inflation rates observed in a long-standing monetary union, namely the United States. Since the start of Stage Three of EMU inflation dispersion within the euro area has been fluctuating close to the level observed across the 14 US metropolitan statistical areas,[3] whereas it has been somewhat higher than that recorded in the four US census regions.[4]

1 Inflation dispersion can be measured in a number of ways. The simplest measure is the spread between the highest and lowest inflation rates. Another conventional measure is the standard deviation of inflation rates across countries. The weighted standard deviation measure takes account of the size of the countries, whereas the unweighted measure gives equal importance to all countries. Other measures of inflation dispersion include the root mean squared deviation around the euro area rate of inflation. All of these measures paint a similar picture regarding the evolution of inflation dispersion in the euro area.

2 For more details, see ECB (2003), *Inflation differentials in the euro area: Potential causes and policy implications*.

3 The 14 MSAs considered are: New York, Philadelphia, Boston, Washington, Chicago, Detroit, Cleveland, Dallas, Houston, Atlanta, Miami, Los Angeles, San Francisco and Seattle. These represent around 41% of total consumer spending in the United States.

4 The four US census regions are: Northeast, which includes the MSAs of New York, Philadelphia, Boston and Washington; Midwest, which includes the MSAs of Chicago, Detroit and Cleveland; South, which includes the MSAs of Dallas, Houston, Atlanta and Miami; and West, which includes the MSAs of Los Angeles, San Francisco and Seattle.

**Table 1 Differentials in annual HICP inflation in relation to the euro area average**

(percentage points)

| | 1999-2004 average | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|---|---|
| Belgium | -0.1 | 0.0 | 0.6 | 0.1 | -0.7 | -0.6 | -0.3 |
| Germany | -0.7 | -0.5 | -0.7 | -0.4 | -0.9 | -1.0 | -0.4 |
| Greece | 1.2 | 1.0 | 0.8 | 1.3 | 1.7 | 1.4 | 0.9 |
| Spain | 1.0 | 1.1 | 1.4 | 0.5 | 1.3 | 1.0 | 0.9 |
| France | -0.2 | -0.6 | -0.3 | -0.6 | -0.3 | 0.1 | 0.2 |
| Ireland | 1.8 | 1.3 | 3.2 | 1.6 | 2.5 | 1.9 | 0.2 |
| Italy | 0.4 | 0.5 | 0.5 | 0.0 | 0.3 | 0.7 | 0.1 |
| Luxembourg | 0.5 | -0.1 | 1.7 | 0.1 | -0.2 | 0.5 | 1.1 |
| Netherlands | 0.8 | 0.9 | 0.2 | 2.8 | 1.6 | 0.2 | -0.8 |
| Austria | -0.4 | -0.6 | -0.1 | 0.0 | -0.6 | -0.8 | -0.2 |
| Portugal | 1.1 | 1.0 | 0.7 | 2.1 | 1.4 | 1.2 | 0.4 |
| Finland | -0.3 | 0.2 | 0.8 | 0.3 | -0.2 | -0.8 | -2.0 |

Sources: Eurostat and ECB calculations.

Importantly, the process of nominal convergence was not accompanied by greater dispersion of economic activity within the euro area. The dispersion of real GDP growth rates in the euro area has, since 1999, remained very close to its historical average and no signs of increased divergence in growth rates have emerged so far. Furthermore, since the late 1980s there has been evidence of an ongoing increase in the cyclical synchronisation of euro area countries.[5] This supports the view that the nominal divergence prior to the introduction of the euro was largely due to exchange rate variations and the variety of monetary policy regimes in place.

At the same time, inflation differentials in the euro area appear to be very persistent, in the sense that many countries have systematically maintained either a positive or a negative inflation gap against the euro area average since the introduction of the euro, as shown in Table 1.

This persistence of inflation differentials seems to be a specific feature of the euro area. Looking at the 14 MSAs in the United States, inflation differentials larger than 1 percentage point and lasting more than two years have been seen only in a few specific cases. By contrast, seven of the twelve economies in the euro area have recorded annual inflation rates remaining either consistently above or consistently below the euro area average since 1999.

A first insight into the possible causes of the persistence of inflation differentials in the euro area can be gathered by performing an inflation accounting exercise, which breaks down the euro area inflation differentials into their primary determinants. The exercise demonstrates the relative importance of both internal factors (such as unit labour costs, profit margins and net indirect taxes) and external factors (such as import prices) in the observed inflation differentials. As Table 2 shows, internal factors (i.e. "domestic costs") were in nine of the twelve countries the most important contributor to the inflation differentials in relation to the euro area average. Import costs also played a major role in some cases. The inflation differentials of Belgium, France and Luxembourg were mainly driven by import cost dynamics.

As regards the internal source of inflation differentials in terms of the GDP deflator, the main contributions to the differentials came from unit labour costs and the gross operating surplus, while net indirect taxes tended to

5 See "Cyclical convergence in the euro area: recent developments and policy implications", *Quarterly Report on the Euro Area*, European Commission, July 2004.

## Table 2 Results of the inflation accounting exercise for the period 1999-2003

| | Final demand deflator | | | GDP deflator | | | | Unit labour costs | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Contribution to change | | | Contribution to change | | | | Contribution to change | |
| | Total change in % | Domestic costs | Import costs [1] | Total change in % | Unit labour costs | Gross operating surplus | Net indirect taxes | Total change in % | Compensation per employee | Inverse labour productivity |
| | 1 = 2+3 | 2 | 3 | 4 = 5+6+7 | 5 | 6 | 7 | 8 = 9+10 | 9 | 10 |
| | Average annual growth in percentage points, unless otherwise indicated | | | | | | | | | |
| Euro area | 1.8 | 1.0 | 0.8 | 2.0 | 1.1 | 0.6 | 0.2 | 1.9 | 2.6 | -0.7 |
| | Deviation from the euro area average [2] | | | | | | | | | |
| Belgium | 0.1 | -0.4 | 0.5 | -0.4 | 0.1 | -0.4 | -0.1 | 0.1 | 0.5 | -0.4 |
| Germany | -1.0 | -1.0 | -0.1 | -1.2 | -0.7 | -0.5 | 0.0 | -1.1 | -1.0 | -0.1 |
| Greece | 1.5 | 1.4 | 0.1 | 1.5 | 0.2 | 1.0 | 0.3 | 0.4 | 3.5 | -3.1 |
| Spain | 1.5 | 1.2 | 0.3 | 1.8 | 0.7 | 0.8 | 0.3 | 1.1 | 1.2 | 0.0 |
| France | -0.7 | -0.3 | -0.4 | -0.6 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 | 0.0 |
| Ireland | 1.3 | 1.2 | 0.1 | 2.4 | 0.0 | 2.0 | 0.3 | 0.4 | 3.5 | -3.0 |
| Italy | 0.8 | 0.8 | 0.0 | 0.5 | 0.3 | 0.2 | -0.1 | 0.7 | 0.0 | 0.8 |
| Luxembourg | 0.3 | -0.4 | 0.7 | 0.3 | 0.7 | -0.6 | 0.2 | 1.4 | 3.3 | -1.9 |
| Netherlands | 0.8 | 0.6 | 0.3 | 1.4 | 1.2 | -0.1 | 0.3 | 1.9 | 1.5 | 0.4 |
| Austria | -0.6 | -0.6 | 0.0 | -0.6 | -0.8 | 0.4 | -0.2 | -1.4 | -0.9 | -0.5 |
| Portugal | 1.0 | 1.3 | -0.3 | 1.6 | 2.0 | -0.9 | 0.5 | 2.9 | 2.7 | 0.2 |
| Finland | -0.8 | -0.4 | -0.4 | -0.8 | -0.2 | -0.5 | -0.1 | -0.2 | 0.5 | -0.7 |

Sources: European Commission, Eurostat and ECB calculations.
1) At the country level, import costs refer to intra and extra-euro area imports.
2) The figures in the table can be interpreted as follows: in the case of Belgium, for instance, the average annual change in the final demand deflator over the period 1999-2003 was 0.1 percentage point higher than in the euro area as a whole. The contribution from average import cost changes to the observed differential in final demand inflation was 0.5 percentage point, whereas the contribution of domestic costs was -0.4 percentage point.

contribute less. Notably, in Germany, France and Finland, below-average dynamics in terms of both unit labour costs and the gross operating surplus contributed significantly to the negative GDP inflation differentials of those countries in relation to the euro area average. By contrast, the positive gaps for Greece, Ireland, Italy and Spain were the result of dynamics above the euro area average in both unit labour costs and profits.

Looking at the unit labour cost developments, the analysis reveals that the compensation per employee component was generally more important than labour productivity in contributing to differentials. The moderate dynamics of unit labour costs in Germany, Austria and, to a lesser extent, France were mainly driven by subdued developments in the compensation component, while the above-average dynamics of the compensation per employee component in Portugal, the Netherlands and Spain drove unit labour costs in those countries. However, in a few cases (Belgium, Greece, Ireland and Finland) the two components appeared to be equally important. In the case of Italy, low labour productivity seemed to be responsible for the observed unit labour cost growth differential.

The diversity of inflation rates among euro area countries also has an important sectoral dimension. Table 3 shows the dispersion of the inflation rates for each of the five main sub-components of the HICP – namely services, non-energy industrial goods, energy, processed food and unprocessed food.

Although it decreased throughout the 1990s, the degree of dispersion in service price inflation across the euro area countries remained higher than that observed for the HICP index as a whole.[6] By contrast, the rates of increase of non-energy

6 This result proves robust to the exclusion from the calculations of those euro area countries that experienced strong idiosyncratic dynamics in the prices of services.

**Table 3 Dispersion[1] of annual sectoral inflation in the euro area**

(percentage points)

| | Overall HICP | Services | Non-energy industrial goods | Energy | Processed food | Unprocessed food |
|---|---|---|---|---|---|---|
| 1994-1998 | 1.95 | 2.43 | 2.12 | 2.78 | 2.67 | 3.25 |
| 1999-2004 | 1.12 | 1.54 | 1.06 | 3.35 | 1.77 | 2.44 |
| memo items: | | | | | | |
| HICP euro area weights 1998 | | 0.34 | 0.34 | 0.09 | 0.13 | 0.09 |
| HICP euro area weights 2004 | | 0.41 | 0.31 | 0.08 | 0.12 | 0.08 |

Sources: Eurostat and ECB calculations.
1) The dispersion is measured as the root mean squared deviation around the euro area average.

industrial goods prices converged significantly throughout the 1990s and levelled off at a low level of dispersion from 1999 onwards. Given the large share of tradable goods among the non-energy industrial items of the HICP, that low level of dispersion is likely to be the result of the process of price level convergence observed in the countries of the euro area. This process was given significant impetus by the implementation of the single market during the first half of the 1990s and continued with the introduction of the single currency. Looking at the more volatile sub-components of the HICP, the evolution of energy prices varies substantially from country to country, a result not only of the significant historical volatility of this sub-index, but also of the considerable heterogeneity of the euro area countries' exposure and responses to external oil shocks.

Given the considerable weight of the service sector in the HICP basket, service price dynamics are the largest contributor to overall HICP inflation dispersion. This role is further enhanced by the fact that the weight of this sub-component in the overall HICP index has increased in recent years, while the weight of non-energy industrial goods has declined.

Overall, several elements can be singled out as being important in accounting for the persistence of euro area inflation differentials, such as wage dynamics, the role of the service sector and the openness of national economies to international trade. However, the available evidence indicates that there is no one single factor which explains the persistence of inflation differentials across euro area economies.

## 3 ORIGINS OF INFLATION DIFFERENTIALS IN THE EURO AREA

In order to ascertain the potential policy implications of persistent inflation differentials, it is necessary to properly identify their underlying causes. However, this is not an easy task because, in a large monetary union such as the euro area, a number of factors may contribute to inflation divergence. This section presents a brief description of the main factors which have been put forward to explain the existence of long-lasting inflation differentials in the euro area. In particular, a distinction is made between transitory factors related to the convergence process; factors related to long-lasting or permanent differences in national economic structures; and policy-induced factors related to the conduct and operation of national fiscal and structural policies or to the various regional responses to euro area-wide policies. Finally, the presence and the relative strengths of amplifying and countervailing factors operating in a currency union are addressed.

## 3.1 INFLATION DIFFERENTIALS OWING TO THE CONVERGENCE PROCESS

### THE MOVE TO STAGE THREE OF EMU

The move to Stage Three of EMU and the one-off convergence of nominal interest rates within the euro area at a level previously seen only in the best-performing national economies has been an important temporary factor shaping inflation differentials in the first years of the euro. Notably, in countries which have in the past experienced higher inflation rates, the adoption of the euro has led to a significant reduction in nominal (and real) interest rates and financial costs, as well as a higher degree of integration with the capital markets of the rest of the euro area. This has contributed to a surge in domestic demand in those countries, exerting sustained upward pressure on prices, particularly in the non-tradable goods and services sectors.

### PRICE LEVEL CONVERGENCE FOR TRADABLE GOODS

The implementation of the European single market in the first half of the 1990s and the subsequent introduction of the single currency in 1999 have contributed to a marked decline in price level dispersion, mainly for tradable goods.[7] This convergence of the absolute prices of tradable goods towards a common long-term level is likely to have accounted for some of the inflation differentials in the first years of the euro, even if its relative contribution is difficult to quantify.[8] Looking ahead, although further improvements in both European and national competition policies may further reduce price differentials for tradable goods, the importance of this type of price level convergence for euro area inflation differentials should diminish over time.[9]

### PRICE LEVEL CONVERGENCE FOR NON-TRADABLE GOODS AND SERVICES: THE BALASSA-SAMUELSON EFFECT

While market integration and increased cross-border price transparency has led to convergence in the price of traded goods, a large part of the HICP is composed of goods and services which are not traded between countries. In this respect, the Balassa-Samuelson effect, a mechanism which can lead to changes in countries' real exchange rates and, in a monetary union, to changes in their respective inflation rates, has often been discussed in relation to persistent inflation differentials in the euro area. At the centre of the Balassa-Samuelson hypothesis are differences in productivity growth in countries' tradable and non-tradable sectors. If labour productivity growth is higher in the tradable sector, wages will tend to increase in that sector without leading to higher unit labour costs. However, if labour mobility between sectors is high, wages will also tend to increase in the non-tradable sector, where – given the lower average labour productivity growth – prices will exhibit higher average increases. Therefore, countries in which there is a larger difference between labour productivity growth rates in the tradable and non-tradable sectors will also experience a higher inflation rate. The Balassa-Samuelson effect reflects an equilibrium phenomenon: international competition among countries ensures that no substantial price pressures emerge in the tradable sector. Price pressures emerge only in the non-tradable sector and there is no need to reabsorb the resulting inflation differentials across countries.

The Balassa-Samuelson effect is often associated with the process of convergence in living standards across economies. Countries with lower than average income which are in the process of catching up normally display strong productivity growth in the tradable sector, while productivity developments in the non-tradable sector are normally more similar across countries.

7 See the article entitled "Price level convergence and competition in the euro area" in the August 2002 issue of the ECB's Monthly Bulletin.

8 Rogers, J. (2002), "Monetary union, price level convergence, and inflation: how close is Europe to the United States?", International Finance Discussion Paper No 740, estimates that the contribution of price level dispersion in 1999 to observed annual HICP inflation dispersion at the end of 2002 amounted to around 16% of the overall inflation dispersion.

9 See Rodriguez-Palenzuela, D., G. Camba-Mendez and J. A. Garcia (2003), "Relevant economic issues concerning the optimal rate of inflation", ECB Working Paper No 278.

Opinions differ on the extent to which the Balassa-Samuelson hypothesis is relevant to the euro area.[10] Overall, it is very difficult to quantify possible Balassa-Samuelson effects, in particular because it is not easy to isolate them from other historical influences on inflation trends, notably differences in monetary policy regimes and exchange rate policies. There is, however, a growing consensus that the Balassa-Samuelson effect constitutes only a partial explanation for the persistent inflation differentials observed in the euro area. One reason for this is the fact that the observed differences in labour productivity trends across euro area countries can only account for a relatively moderate share of inflation diversity, as shown in Section 2.

The size of the Balassa-Samuelson effect for countries currently in the euro area is likely to diminish over time, given that there has already been substantial convergence among those countries in terms of per capita GDP. At the same time, such an effect may be more relevant in giving rise to lasting inflationary pressures in some of the new Member States wishing to adopt the euro, given their lower starting income and price levels.

### 3.2 INFLATION DIFFERENTIALS OWING TO STRUCTURAL DIFFERENCES

#### HETEROGENEITY IN CONSUMERS' PREFERENCES

One structural factor that may in principle contribute to lasting inflation and output differentials in a currency area relates to deep-seated differences across countries in households' preferences as regards consumption. This heterogeneity in preferences is reflected in the fact that the shares of the various goods and services in national consumption and value added differ from country to country and thus have different weights in the various sub-indices of the national HICPs. However, empirical evidence has shown that this factor makes a relatively minor contribution to the inflation dispersion observed in the euro area.[11]

#### THE DEGREE OF OPENNESS AND THE COMPOSITION OF TRADE

The divergence in inflation rates within the euro area may also have an external dimension related to differences in national exposure to changes in the exchange rate of the euro and the price of raw materials. In particular, differences in the degree of openness, in the composition of international trade and in trade links with non-euro area partner countries might be relevant factors explaining inflation differentials. For example, a euro area country mainly importing from outside the euro area will experience different inflationary pressures if the euro exchange rate depreciates as compared with a country that trades mainly with other euro area countries. Fluctuations in the exchange rate of the euro, coupled with asymmetries in trade links, have helped to explain some of the inflation differentials observed in the euro area. Considered alone, however, this type of heterogeneity cannot account for the inflation differentials observed among the largest euro area economies. In this respect, one complementary explanation might be that the role of external shocks and the effect of differences in trade composition are being enhanced by the presence of a high degree of inflation inertia in euro area countries.

#### RIGIDITIES IN WAGE AND PRICE-SETTING

The process of adjustment to changing economic conditions typically requires the continuous adjustment of relative prices across regions and sectors. Such a mechanism, which is a normal and desirable feature of a market-based economy, may give rise to short-lived inflation differentials across the regions and sectors of a monetary union in the face of demand and supply shocks. However, the presence of rigidities affecting the price and wage formation mechanism delays the necessary adjustment and gives rise to

10 ECB (2003), *Inflation differentials in the euro area: Potential causes and policy implications*.
11 Ibid.

distortions in relative prices after such shocks, contributing to lasting inflation differentials.[12]

In this respect, recent provisional evidence from the Eurosystem Inflation Persistence Network[13] helps to shed light on the importance of rigidities in the price-setting behaviour of firms in the euro area. On the basis of micro data on consumer prices, the Network calculates that the average consumer price duration[14] in the euro area is between four and five quarters, compared with an estimate of around two quarters for the United States. This seems to indicate that, on average, there is greater rigidity in price-setting in the euro area than in the United States. As regards differences in the frequency of price changes, heterogeneity across products and sectors appears to be more pronounced than heterogeneity across countries. Moreover, the ranking of products and sectors in terms of the degree of price stickiness is not only similar in each of the countries analysed, but is also similar to that observed in the United States. Euro area energy and unprocessed food prices seem to change most frequently, while service prices appear to be modified less frequently.

If service prices are indeed characterised by a systematically longer adjustment process, perhaps on account of some intrinsic features of the price-setting mechanism, this could, given the large weight of the non-tradable sector in the economy, generate significant and persistent inflation divergence.

This conclusion would seem to sit well with the evidence presented in Table 3, which indicates that the service sector (which accounts for most of the price dynamics of the non-tradable sector) makes a significant contribution to overall inflation dispersion. It is also corroborated by the evidence in Table 2 on the importance of unit labour costs in explaining differentials in changes in GDP deflators across the euro area, given that a large share of the total output of the service sector is accounted for by employment compensation. Overall, this suggests that a substantial part of persistent divergence in price developments may stem from differences in wage developments and wage-setting mechanisms across euro area countries (including, in some countries, the automatic indexation of nominal wages to prices).

### 3.3 POLICY-RELATED FACTORS

Both area-wide and regional policies might themselves shape the degree of heterogeneity in a currency union. Fiscal policies in particular may be one source of inflation and output differentials in the euro area. First, changes in administered prices and indirect taxes can add to inflation dispersion, at least in the short to medium term. In the euro area, administered prices account for around 6% of the entire HICP. However, it has been shown that the difference between the dispersion of HICP inflation and that of HICP inflation excluding administered prices has been very small since 1999.[15] More importantly, fiscal policy can also help to create or reinforce inflation differentials through the inappropriate use of fiscal instruments. In this respect, there is some evidence that the pro-cyclical effects of the fiscal policies of euro area countries may have helped to increase cyclical differences among euro area countries in the recent past.[16]

12 See, among others, Angeloni, I., and M. Ehrmann (2004), "Euro area inflation differentials", ECB Working Paper No 388 and Altissimo, F., P. Benigno and D. Rodriguez-Palenzuela (2004), "Inflation differentials in a currency area: facts, explanations and policies", presented at the ECB workshop "Monetary policy implications of heterogeneity in a currency area", Frankfurt, 13-14 December 2004, available at www.ecb.int.

13 See the proceedings of the conference "Inflation persistence in the euro area", Frankfurt, 10-11 December 2004, available at www.ecb.int. The paper by Angeloni, I., L. Aucremanne, M. Ehrmann, J. Gali, A. Levin and F. Smets (2004), "Inflation persistence in the euro area: preliminary summary of findings", available on the conference webpage, provides a summary of the provisional evidence gathered so far within the Eurosystem Inflation Persistence Network project.

14 Price duration is defined as the time elapsing between two successive price changes.

15 See ECB (2003), *Inflation differentials in the euro area: Potential causes and policy implications*. Nevertheless, changes in indirect taxes and administered prices in some euro area countries appear to have contributed somewhat to the increases in HICP inflation dispersion observed in the first half of 2004.

16 See footnote 5.

Structural policies conducted at the national or regional level can also be a source of inflation differentials. For example, policies aimed at influencing the structure of the labour market may modify wage-setting behaviour. The fact that indexation clauses in collective wage-bargaining agreements are present in some euro area countries may, for instance, contribute to the persistence of inflation differentials by increasing inflation inertia in those countries.

Monetary policy in a currency union can also add to inflation dispersion via its differentiated transmission across countries, particularly in the presence of differing degrees of nominal rigidities. In this respect, however, there is no conclusive evidence of systematic differences in the transmission of monetary policy impulses across euro area countries.[17] Differences in the estimated impact of monetary policy on output and prices across countries do not tend to be robust to different methodologies, data and models. Furthermore, the effects of monetary policy depend critically on the monetary policy regime in place; the change in policy regime owing to the introduction of the euro might have modified the transmission mechanism of monetary policy across euro area countries, making it more difficult to properly extrapolate from historical experiences.

### 3.4 AMPLIFYING AND COUNTERVAILING MECHANISMS WITHIN THE MONETARY UNION

In the euro area, as in other monetary unions, the official interest rate set by the central bank is uniform across participating countries. At the same time, inflation differentials across countries can arise for a variety of reasons. It is sometimes argued that the combination of the above two factors leads to differing real interest rates across countries, which may have a destabilising effect on national economies, in particular by helping to strengthen inflation differentials. For instance, it is argued that countries with higher than average inflation experience lower real interest rates, which in turn fuel domestic demand and inflation, and that, conversely, countries with lower than average inflation experience higher real interest rates, resulting in further downward pressure on domestic demand and inflation. However, these views do not take into account all the underlying factors.

First of all, the above argument is generally made with reference to ex post measures of the

17 See the article entitled "Recent findings on monetary policy transmission in the euro area" in the October 2002 issue of the ECB's Monthly Bulletin.

**Table 4 Selected statistics on the dispersion of real interest rates within the euro area**

(percentage points)

| | | Short-term real interest rates [1] | | Long-term real interest rates [2] | |
|---|---|---|---|---|---|
| | | Ex ante: Inflation forecasts for the following year [3] | Ex post: Current HICP annual inflation rate | Ex ante: Long-term (six to ten years ahead) inflation forecasts [3] | Ex post: Current HICP annual inflation rate |
| **Standard deviation** | | | | | |
| 1990-1998 | *unweighted* [4] | 1.69 | 0.82 | 1.29 | 0.68 |
| | *weighted* [5] | 1.26 | 0.75 | 1.23 | 0.64 |
| 1999-February 2005 | *unweighted* [4] | 0.52 | 0.76 | 0.26 | 0.58 |
| | *weighted* [5] | 0.45 | 0.66 | 0.23 | 0.54 |

Sources: BIS, Consensus Economics, ECB, ECB calculations, Eurostat and Reuters.
1) Three-month money market interest rates (EURIBOR for the period 1999-2005). All the euro area countries excluding Luxembourg.
2) Ten-year government bond yields, where available; otherwise yields on instruments with the closest maturity. Figures include France, Germany and Italy, and from 1995 also the Netherlands and Spain.
3) Individual countries' forecasts are taken from Consensus Economics forecasts.
4) The same weights are attributed to each of the euro area countries considered.
5) Based on 2002 GDP weights at PPP exchange rates.

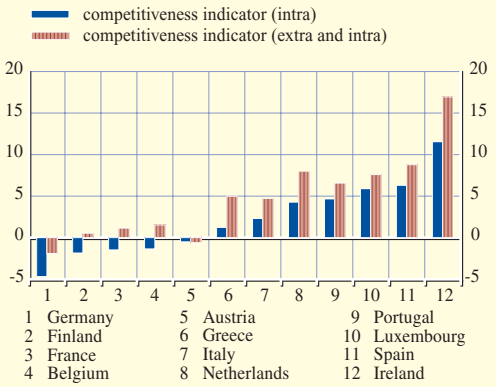
real interest rate, calculated by subtracting the current observed level of inflation from nominal interest rates. By contrast, what matters for investment and consumption decisions are ex ante measures of real interest rates, i.e. the difference between market interest rates and expectations for inflation developments over the relevant horizon.[18] By way of illustration, Table 4 compares the dispersion of ex post and ex ante real interest rates, the latter being computed using inflation forecasts (for the HICP) over the relevant horizon as compiled by Consensus Economics.[19]

The dispersion across countries of ex ante measures of real interest rates is significantly lower than that of ex post measures. In the case of long-term interest rates, the dispersion of ex ante measures of real interest rates has since 1999 been approximately half that of real interest rates measured using realised inflation. Furthermore, since 1999 the dispersion of ex ante measures of real interest rates has been about one-third of that prevailing before the inception of the euro. By contrast, the dispersion of the ex post measures has remained broadly unchanged.

Second, and perhaps even more fundamentally, the consequences of inflation differentials (and thus of differing real interest rates) obviously depend on the underlying causes, which, as mentioned, are manifold. For example, if a country's lower than average inflation rate is due to higher than average productivity growth, this would be an indication that the country in question has strong investment prospects, even if its observed real interest rate is higher than that of other countries.

Finally, in a monetary union, where exchange rates among countries are by definition fixed, there are strong market-based forces that work in a stabilising manner. In particular, if a country has lower than average inflation on account of weak demand, it will become more competitive in relation to other countries. This tends to increase demand in that country (and reduce demand in others) over time. As has been shown in a number of recent studies, the competitiveness ("real exchange rate") channel, although slow to build up, eventually becomes the dominating adjustment factor.[20] In this respect, Chart 2 shows that, as a consequence of the prolonged inflation differentials observed, the euro area countries have experienced marked differences in terms of the evolution of national competitiveness.[21]

**Chart 2 National competitiveness indicators[1] – cumulative percentage change between January 1999 and December 2004**




Source: ECB calculations.
1) An increase indicates a real effective appreciation or a decline in national competitiveness based on consumer prices. The first indicator (intra) is based on intra-euro area trade, whereas the second indicator (extra and intra) also incorporates trade with a group of 23 euro area trading partners.

18 For further details, see the box entitled "Measuring real interest rates in the euro area countries" in the September 2004 issue of the ECB's Monthly Bulletin.

19 Consensus Economics inflation forecasts are available for all euro area countries except Luxembourg over shorter horizons, but are available only for the five largest euro area countries over longer horizons.

20 See, for instance, Deroose, S., S. Langedijk and W. Roeger (2004), "Reviewing adjustment dynamics in EMU: from overheating to overcooling", Economic Paper No 198, European Commission, and Angeloni, I., and M. Ehrmann (2004), "Euro area inflation differentials", ECB Working Paper No 388.

21 For further details, see Buldorini, L., S. Makrydakis and C. Thimann (2002), "The effective exchange rates of the euro", ECB Occasional Paper No 2, and the box entitled "Update of the overall trade weights for the effective exchange rates of the euro and computation of a new set of euro indicators" in the September 2004 issue of the ECB's Monthly Bulletin.

## 4 IMPLICATIONS OF INFLATION DIFFERENTIALS FOR THE DESIGN OF ECONOMIC POLICIES

As described above, inflation differentials in the euro area reflect to some extent longer-term equilibrium phenomena and the normal and healthy operation of market-based adjustments in relative prices following economic shocks. In the particular case of a – in historical terms – recently established monetary union, the introduction of a single currency entails a gradual but fairly substantial transformation of the economic structures in place and creates the potential for a long-term economic adjustment process. Inflation differentials across euro area countries may therefore reflect at least in part equilibrating changes in relative prices, which are an unavoidable and also desirable manifestation of the gradual but ultimately far-reaching structural transformations to which monetary integration and the single market process give rise.

However, at least to some extent, the persistent inflation differentials observed in the euro area are also a product of misaligned national fiscal policies, wage developments and deep-seated structural inefficiencies such as nominal and real rigidities in product and factor markets, and can result in damaging developments for the national economies. It is typically the impediments to the operation of market forces, which delay the adjustments needed after economic shocks, that need to be addressed by policy-makers.

### 4.1 STRUCTURAL REFORMS IN LABOUR AND PRODUCT MARKETS

It is widely recognised that two elements are crucial to the smooth adjustment to changing economic conditions and the efficient functioning of a currency area: the mobility of factors of production and flexibility in wage and price-setting.

With regard to the mobility of factors of production, a clear dichotomy can be observed in the euro area.

On the one hand, the process of integrating financial markets has already come a long way. Although further action is needed to remove the remaining market segmentation and regulatory impediments to free competition, a continuous increase in cross-border financial and capital flows is being observed, as well as increasing competition in the provision of financial services. A deepening of financial integration in the years to come will allow investors to diversify their portfolios more efficiently and thereby provide a cushion against localised macroeconomic risks.

On the other hand, the other main factor of production – labour – is, it appears, either too slow to react to wage and demand signals or is being prevented from doing so by persistently distorted price signals, leading to relatively low labour mobility between countries and regions, as well as between sectors and professions. This points to a need for more flexible labour markets in the context of EMU, particularly at the national and regional levels. The importance of such flexibility is further enhanced by the presence of elements of a permanent nature, such as linguistic and cultural differences, which inhibit labour mobility across countries. Some discernible progress has been seen in almost all countries of the euro area over the past decade with regard to labour market reform. However, labour markets in the euro area still appear to be too rigid and unresponsive to economic conditions. This is reflected in the persistently high level of structural unemployment and low labour force participation rates in most countries. Further measures could usefully target disincentives to labour market flexibility, for instance those stemming from high replacement rates, compressed wage structures and employment protection legislation.

Similarly, in order to improve the efficiency of price signals in the goods and services markets, thereby enhancing the efficiency of resource allocation in the economy, it is crucial to continue the process of strengthening effective competition, for instance through liberalisation and deregulation. An

intensification of competition through regulatory reforms will not only enhance innovation and productivity and reduce prices in the markets concerned, but will also increase the economic region's resilience and ability to adapt to continuously changing economic conditions.

### 4.2 FISCAL POLICY

Fiscal policies can also help to enhance the ability of individual countries to respond to economic shocks and reduce the potentially damaging effects of prolonged inflation differentials. In particular, sound government finances are crucial in order for individual countries to be able to let automatic stabilisers work fully without running the risk of excessively high deficits. This represents an important mechanism in the process of macroeconomic adjustment in response to regional divergence. Historical experience shows that discretionary fiscal policies are – especially considering the implementation and impact lags involved – an inappropriate instrument when it comes to responding to cyclical fluctuations. It is particularly important in this respect that governments prevent discretionary policy measures from acting pro-cyclically over the business cycle, thereby exacerbating divergence across countries after asymmetric shocks.

### 4.3 IMPLICATIONS FOR MONETARY POLICY

There is a broad consensus among academics, observers and policy-makers that monetary policy should focus on maintaining price stability in the currency area as a whole. Thus, monetary policy should anchor inflation expectations and increase market transparency, thereby facilitating the necessary adjustment of relative prices across different countries or sectors in the presence of economic shocks. By contrast, it is widely recognised that assigning to monetary policy the additional role of directly addressing the relative balance between the sectors or regions of the currency area in the process of adjustment to shocks would overburden monetary policy to the detriment of its primary role.

At the same time, the debate has more recently also tended to highlight some more direct implications of inflation differentials for the formulation of monetary policy in a monetary union, particularly where such differentials are coupled with, or are the product of, nominal and real rigidities.

Box 1 critically reviews some of the recent contributions appearing in economic literature which deal with this topic. While, as discussed in the box, some of the conclusions of this recent analysis are very much dependent on the specific analytical framework adopted and some of the recommendations would encounter significant implementation problems, some important general conclusions can still be drawn. First, the presence of long-term equilibrium inflation differentials across countries may constitute an additional reason (together with other prominent reasons, such as the need to ensure a sufficient safety margin to guard against the risks of deflation) for the central bank to aim to maintain the inflation rate in the currency area as a whole low, but not too close to zero. Second, it is important for the central bank to take into account regional and sectoral information on the source and nature of economic shocks, including monitoring and understanding the underlying reasons for inflation differentials, even if it formulates its policy with a view to maintaining price stability for the currency area as a whole. Finally, by maintaining a medium-term orientation in the conduct of its monetary policy, a central bank is able to facilitate the necessary adjustment of relative prices across regions and sectors in the presence of asymmetric shocks.

Box 1

## RECENT ECONOMIC LITERATURE ON THE IMPLICATIONS OF INFLATION DIFFERENTIALS FOR MONETARY POLICY IN A CURRENCY UNION

Economic and Monetary Union has spurred a number of analytical contributions aimed at assessing the implications of inflation differentials for the conduct of the single monetary policy.

A first stream of analytical work has addressed the policy implications of inflation differentials generated by equilibrium factors such as the Balassa-Samuelson effect (as described in Section 3).[1] In such circumstances, inflation differentials across a currency area reflect equilibrating changes in relative prices, which are an unavoidable and desirable manifestation of the gradual adjustment induced by the process of monetary integration. However, in the presence of downward nominal rigidities in price and wage-setting, these differentials may become a source of concern for the central bank because they can impair the ability of a common monetary policy to operate effectively at very low levels of inflation. In the presence of downward nominal rigidities, countries experiencing inflation rates which are persistently below average may possibly face episodes of prolonged deflation and may encounter difficulties in regaining competitiveness. While such arguments are not without foundation (and, indeed, are taken into account by the ECB, as discussed in Section 5), their quantitative importance should not be exaggerated. First, as mentioned above, the available quantitative estimates of the Balassa-Samuelson effect in the euro area point to this factor generally making a relatively small contribution to the explanation of inflation differentials. Second, the empirical evidence indicates that there is significant scope for downward flexibility in prices and wages in the euro area.[2]

A second stream of literature advocates the active engagement of monetary policy in tackling inflation differentials arising from the presence of nominal and real rigidities in monetary unions.[3] According to these arguments, in order to achieve its final goal – usually defined as the economic welfare of the monetary union in the context of a specific model – the central bank should target an objective defined using a price index that assigns a weight to sectoral or regional units which differs from the relative size of those units. That weighting should instead reflect estimates of key structural features of the sectoral or regional unit concerned. In this respect, a key conclusion drawn by such assessments is that overall economic welfare in these stylised models is enhanced by a monetary policy that assigns larger weights to sectors or regions where price developments are more persistent. The rationale for this can be described as follows. In an economy with two sectors of equal size, one more rigid (i.e. featuring a higher degree of friction in the adjustment of relative prices following shocks) and the other more flexible, a monetary policy that does not take account of sectoral heterogeneity in the weighting of the price index implies that, upon the occurrence of an aggregate shock, the two sectors have to adjust in a similar way. However, the rigid sector bears a higher cost than the flexible sector in its adjustment to that macroeconomic shock. This imbalance leads to a welfare loss for the

1 See, among others, Sinn, H.-W., and M. Reuter (2001), "The minimum inflation rate for Euroland", NBER Working Paper No 8085.
2 See the proceedings of the conference "Inflation persistence in the euro area", Frankfurt, 10-11 December 2004, available at www.ecb.int.
3 See, for example, Woodford, M. (2003), *Interest and Prices: Foundations of a Theory of Monetary Policy*, Princeton University Press and Benigno, P. (2004), "Optimal monetary policy in a currency area", *Journal of International Economics*, 63, pp. 293-320.

currency union that could be reduced. By weighting the more rigid sector to take into account more than just its overall size, monetary policy would make sure that the flexible sector responded to a higher degree to the shock, thus making a stronger contribution to the overall adjustment needed in the economy.

While intuitively appealing in the context of stylised models of the economy, there are obvious arguments against the above prescriptions and, in particular, substantial problems related to any practical implementation. First of all, there would be enormous problems related to the appropriate measurement of the degree of nominal rigidity in the various sectors or regions, given that there is no one single method of measuring such rigidity – or even a standard definition of the phenomenon. It would also be very difficult to determine the level at which such nominal rigidity should be measured (for instance, whether the relevant units should be sectors, regions or countries). All of this would introduce substantial elements of arbitrariness and uncertainty in the conduct of monetary policy and negatively affect the transparency of the objective pursued by the central bank and thus its accountability. Secondly, the possibility cannot be ruled out that by assigning greater importance to a particular country or sector-specific development, monetary policy would in practice be accommodating behavioural or structural inefficiencies, ultimately creating perverse incentives and hampering the necessary progress towards more market-based adjustment mechanisms. Furthermore, the communication of monetary policy would face considerable challenges, since its conduct would become significantly more complex and difficult to explain to the public.

This literature, however, also makes the important point that, for any given objective of monetary policy, it is critical for the central bank to take into account the source and nature of economic shocks, including those originating at the local level, in formulating the most appropriate monetary policy response. This point is specifically addressed by a third stream of economic research, which analyses the role of sectoral and regional information in the conduct of monetary policy.[4] In these models, the objective of monetary policy is expressed (as is the case for the euro area) in terms of an area-wide price index which assigns a weight to countries according to their relative size. It is shown that even in this case monetary policy could improve its performance by taking into account disaggregated (i.e. sectoral and regional) information on economic developments rather than looking exclusively at aggregated, area-wide information.

4 See, for example, Angelini, P., P. Del Giovane, S. Siviero and D. Terlizzese (2002), "Monetary policy rules for the euro area: what role for national information?", Banca d'Italia Working Paper No 457.

## 5 THE RELEVANCE OF INFLATION DIFFERENTIALS AND DISAGGREGATED INFORMATION FOR THE ECB'S MONETARY POLICY

As laid down in Article 105(1) of the Treaty, the primary objective of the ECB is to maintain price stability for the euro area as a whole. Price stability makes it easier for people to recognise changes in relative prices, since such changes are not obscured by fluctuations in the overall price level. This enables firms and consumers to make better-informed decisions on consumption and investment, allowing the market to allocate resources more efficiently and enhancing the productive potential of the economy. Thus, by maintaining a stable price level, monetary policy contributes to the adjustment of relative prices as well as facilitating their role in guiding the allocation of resources across the sectors and countries of the euro area. This is the best contribution that

monetary policy can make to economic welfare and the achievement of high levels of economic activity and employment.

In 1998 the ECB announced its definition of price stability as a "year-on-year increase in the Harmonised Index of Consumer Prices (HICP) for the euro area as a whole of below 2%". The choice of Eurostat's HICP, a consumer price index harmonised across the Member States of the EU, has the advantage of transparency, as it is the measure that most closely approximates the price of a representative basket of consumption goods and services purchased by euro area households.

In May 2003, as part of its review of the ECB's monetary policy strategy, the Governing Council of the ECB clarified its price stability objective, explaining that, in pursuing price stability, it aims to maintain inflation rates "below but close to 2%" over the medium term. The aim of maintaining the inflation rate close to the upper bound of its definition of price stability signals the ECB's commitment to providing an adequate margin to guard against the risk of deflation. At the same time, the Governing Council made it clear that this also takes into account the implications of inflation differentials across the countries of the euro area. It was thus recognised that inflation differentials could pose a risk to regions with structurally lower inflation rates in terms of the potential costs of adjustment associated with the possible presence of downward nominal rigidities.

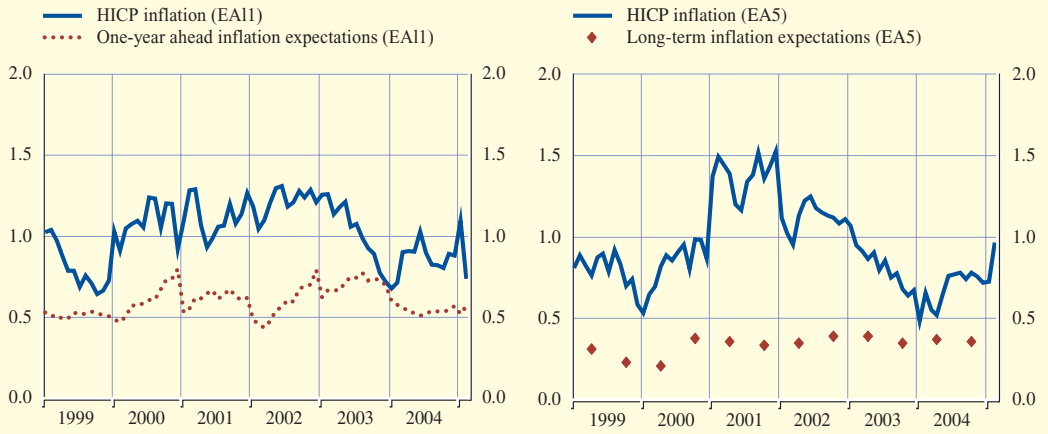
While the ECB's internal work, analysis and assessment of economic information, its policy deliberations and its decisions are directed at the aim of maintaining price stability for the euro area as a whole, this does not mean that the ECB looks exclusively at aggregated (i.e. area-wide) information. In order to achieve its objective and, in particular, in order to conduct its broad-based analysis of the risks to price stability over the medium term, the ECB regularly reviews and analyses all relevant information relating to the various sectors and countries of the euro area. Thus, it closely monitors sectoral and national developments, including various price and output developments.

There are several important aspects to this activity. First, analysing sectoral and national developments in the euro area helps to sharpen the assessment of the economic situation and its possible evolution for the euro area as a whole. One example of such intensive use of disaggregated information is the Eurosystem macroeconomic projections, which are produced and published twice a year by the ECB. In such exercises, experts from the Eurosystem jointly analyse, discuss and interpret a large amount of economic information at the sectoral and national level. The final projections are produced by aggregating the expected developments at the level of the individual economies, taking into account the spillover of local developments into the rest of the euro area. Such methodology is key to obtaining a better understanding of the underlying trends and economic prospects for the euro area as a whole.

Second, as mentioned in previous sections, it is essential that the central bank is able both to understand the source and nature of economic shocks (i.e. whether they originate from the demand or the supply side, and whether they are permanent or of only a temporary nature) and to assess their effect on the economy as a whole in order to formulate the best possible monetary policy response. In this respect, the analysis of disaggregated information is key, as some relevant area-wide shocks originate in specific countries or sectors. Third, this analysis is essential to identifying structural barriers that may hamper adjustment and efficiency-enhancing change in the euro area, allowing the ECB to inform the public and effectively discuss with other European policy-making institutions the most appropriate action to take. Finally, a crucial element of the ECB's monetary policy strategy is its medium-term orientation, that is to say, the fact that it does

**Chart 3 Dispersion of annual inflation rates and inflation expectations[1)]**

(unweighted standard deviation in percentage points)




Sources: Eurostat, Consensus Economics and ECB calculations.
1) Consensus Economics inflation forecasts are available for all euro area countries except Luxembourg over short horizons (EA11; left-hand panel); they are available only for the five largest euro area economies over longer horizons (EA5; right-hand panel).

not attempt to maintain or restore price stability in the very short term following economic changes. This allows the ECB to formulate the best possible monetary policy taking into account the nature of economic shocks and, at the same time, provides flexibility for individual economies or sectors to adjust gradually after localised or asymmetric shocks.

The ECB's clear and unambiguous quantitative definition of price stability, its high degree of credibility and its strong focus on the achievement of its primary objective have allowed inflation expectations in the euro area to be maintained in line with its definition of price stability. An important positive effect of this is that inflation expectations at the country level are very similar to one another. Chart 3 shows that the dispersion of inflation expectations across euro area countries one year ahead (left panel) and six to ten years ahead (right panel), as compiled by Consensus Economics, is very low, indeed much lower than the dispersion of realised inflation. Given the importance of expectations for future developments in wage and price-setting behaviour, this implies that a powerful mechanism has been set in motion which is helping to maintain a high degree of uniformity for price developments across the individual countries of the euro area.

## 6 CONCLUSION

Inflation differentials across the regions or sectors of a monetary union are a natural product of the continuous readjustment of relative prices in a market economy. Such equilibrating changes in relative prices, which form an integral and essential part of any market economy, provide the signals and incentives for market participants from both the supply and demand sides to reallocate resources and set in motion economic change.

Inflation differentials in the euro area are – as indicated by the evidence and analyses described in previous sections – partly a reflection of such equilibrating changes in relative prices. They are also an essential element of the economic adjustment process in the context of the fundamental structural transformations taking place in the euro area as a consequence of Economic and Monetary

Union. As such, inflation differentials are a desirable phenomenon and should be allowed to perform their equilibrating role without hindrance.

However, the persistence of inflation differentials in the euro area also reflects a lack of flexibility and adaptability in the institutions and market structures of the national economies. Such structural differences require strong determination on the part of those with responsibility for national policies, which should aim to achieve a high degree of flexibility and adaptability in all regions of the euro area.

In line with its mandate as laid down in the Treaty, the ECB focuses on maintaining price stability in the euro area as a whole and does not seek to address questions of relative prices or inflation differentials. The ECB's internal work, analysis and assessment of economic information, its policy discussions and its deliberations are directed at achieving its primary objective for the euro area as a whole. In order to achieve this objective and, in particular, in order to conduct its broad-based analysis of the risks to price stability over the medium term, the ECB regularly reviews and analyses not only the information contained in euro area macroeconomic aggregates, but also the relevant information at the sectoral and country level. The analysis of disaggregated information is indispensable when identifying the underlying trends and structural shocks that drive euro area developments. Thus, sectoral and national information is a fundamental element of the ECB's assessment of the risks to price stability in the euro area.