

## ARTICLES

# MONITORING LABOUR COST DEVELOPMENTS ACROSS EURO AREA COUNTRIES



*Cumulative increases in labour costs across euro area countries can be indicative of growing imbalances and losses in competitiveness and, as such, are an important early sign of the need for adjustment. Relative developments in labour costs across the euro area countries, together with other indicators of competitiveness, have therefore to be closely monitored.*

*In the context of the euro area, where monetary policy has to be geared towards maintaining price stability for the euro area as a whole, the accumulation of competitiveness losses and imbalances in a country points to the need for the national authorities to react. Such a reaction should focus on implementing measures to improve the functioning of the labour and product markets and to dampen labour cost increases. The sooner corrective measures are taken by the national authorities, the lower the risks of a protracted period of low growth and losses in employment in that country.*

*This article reviews the main stylised facts in labour cost developments and competitiveness indicators across euro area countries, as well as the adjustment processes they experience, focusing on the period since the start of Stage Three of EMU in 1999. It subsequently discusses the main factors behind these developments and highlights relevant policy considerations for national authorities and social partners alike.*

### I INTRODUCTION

The euro area is an expanding currency union that will undergo further enlargement in January 2009, when a sixteenth country joins. The introduction of a common currency has, in particular, eliminated the effects of exchange rate fluctuation among the participating countries, thus reducing transaction costs and enhancing cross-border price transparency, thereby promoting trade and, ultimately, greater economic integration. Nonetheless, there are differences in the macroeconomic performance of the countries and regions within the euro area. Some of these differences show up in labour cost developments.

Labour costs differentials can, in principle, be a desirable feature of a well-functioning economy. Such differentials reflect differences in local labour market conditions and diverse underlying productivity developments. In the context of a monetary union, different nominal wage developments across countries can serve as an important vehicle for adjustment in case of country-specific shocks or common shocks with a different domestic transmission.

However, large and persistent positive differentials in nominal wage growth, which

do not reflect productivity developments, could imply losses in competitiveness and export market shares with, inter alia, adverse repercussions in the medium-term prospects for output growth and employment in some euro area countries. In particular, there is the risk that substantial and persistent labour cost growth would ultimately translate into deteriorating domestic labour market conditions in these countries, implying painful adjustment costs in terms of job and output losses that could have been avoided in a number of ways, including a more flexible and efficient functioning of the labour market and labour cost moderation.

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 cannot therefore address differences in labour costs or other country-specific economic developments. However, the ECB has to assess the underlying causes of such differentials, as this is key to better understanding euro area developments.

Against this background, this article describes the main features and possible causes of differentials in labour cost developments and adjustment processes across euro area countries and discusses their implications for national

economic policies.<sup>1</sup> The article is structured as follows: Section 2 provides evidence on labour cost developments; Section 3 presents stylised facts on various competitiveness measures and developments in current account balances and export performances; Section 4 discusses determinants of wage differentials and their implications in the adjustment processes; and Section 5 discusses the implications of these differentials for economic policies and draws a number of conclusions.

## 2 EVIDENCE ON LABOUR COST DEVELOPMENTS: STYLISTED FACTS

To facilitate the comparison of developments over time and across countries, labour costs can be measured in terms of unit of labour, i.e. compensation per employee, or in terms of unit of output, i.e. unit labour cost. Although there are various ways of calculating unit labour cost, a standard formulation is to divide compensation per employee by productivity, measured as real output divided by employment. In this way, it is evident that increases in unit labour costs are the result of either higher compensation per employee or lower productivity, or a combination of both factors.

However, some measurement issues and caveats should be borne in mind when calculating unit labour costs, especially when comparing developments across countries. First, labour input can be measured in various ways, namely in terms of persons, full-time equivalents or hours. For homogeneity of the data over time and their comparability across countries, this article uses employment in full-time equivalent terms. Full-time equivalent employment is defined as total hours worked divided by the average annual number of hours worked in full-time jobs within the economic territory. For instance, a person working according to a 50% part-time arrangement would be equivalent to 0.5 in full-time equivalent terms. Second, the calculation of unit labour costs reported in this article refers to the whole economy rather than to a specific sector, such as the manufacturing sector. Third, the calculation of unit labour costs implicitly assumes that the self-employed are remunerated

1 Two articles published by the ECB have previously dealt with various aspects of euro area country differentials, namely "Output growth differentials in the euro area: sources and implications" in the April 2007 issue of the Monthly Bulletin and "Monetary policy and inflation differentials in a heterogeneous currency area" in the May 2005 issue of the Monthly Bulletin.

Table 1 Unit labour costs across euro area countries

(annual percentage changes)										
	1999	2000	2001	2002	2003	2004	2005	2006	2007	Cumulative growth 1999 - 2007
Euro area	0.9	1.1	2.3	2.3	2.1	0.8	1.1	1.0	1.5	14.0
Belgium	1.3	0.3	4.2	2.1	0.7	-0.3	1.5	1.6	2.0	14.2
Germany	0.5	0.7	0.9	0.9	1.0	0.0	-0.8	-1.0	0.2	2.3
Ireland	0.6	3.4	4.4	0.8	3.9	5.1	3.7	3.1	4.2	33.0
Greece <sup>1)</sup>			2.5	6.0	2.4	1.8	3.7	4.6	4.4	28.3
Spain	1.9	2.8	3.2	2.9	2.9	2.4	2.5	2.3	2.7	26.4
France	0.9	1.1	2.3	2.9	1.8	1.1	1.7	1.9	2.3	17.2
Italy	1.2	0.6	3.1	3.6	4.4	2.1	2.8	2.3	1.5	23.7
Luxembourg	0.7	2.5	6.5	2.2	1.9	1.3	1.7	2.2	3.4	24.7
The Netherlands	1.7	2.9	5.0	4.8	2.7	0.2	-0.2	1.1	1.6	21.7
Austria	0.1	-0.2	1.0	1.0	0.8	-0.3	1.4	0.7	1.2	5.9
Portugal	2.4	4.9	5.2	3.7	3.2	1.2	2.0	1.8	0.4	27.6
Finland	0.8	1.0	3.5	1.1	1.1	0.2	2.3	-0.2	1.1	11.6

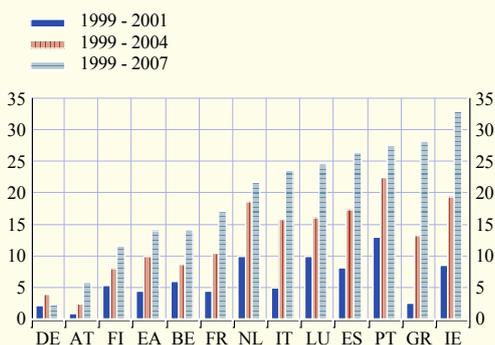
Source: European Commission.

Note: The table shows data for the years since the introduction of the euro in the respective country.

1) In the case of Greece, the cumulative unit labour cost growth refers to the period 2001-07. Calculations by the Bank of Greece may differ from those shown in this table.

**Chart 1 Cumulative growth in unit labour costs**

(percentage changes)



Source: European Commission.

Notes: Countries are given in ascending order according to cumulative unit labour cost growth during the period 1999-2007. In the case of Greece, 2001 is the reference year (see also the notes in Table 1).

at the same average compensation level as employees.<sup>2</sup>

Overall, although the calculation of growth rates in unit labour costs in the various countries can differ somewhat depending on the choice of the data mentioned above and certain associated limitations, the main thrust of the analysis shown in this article does not appear to be altered by these measurement issues.

It can be seen from Table 1 that a number of euro area countries have witnessed relatively strong increases in unit labour costs since the beginning of 1999. In particular, in cumulative terms, over the nine-year period from 1999 to 2007, a group of countries have accumulated increases in unit labour costs of between 25% and 35%, well above the euro area average cumulative increase of around 14%. This contrasts with the very modest cumulative increases seen in a few other countries.<sup>3</sup>

A special feature of the labour cost developments across the euro area countries is their high degree of persistence. In some countries, cumulated labour cost growth has been consistently either above or below the euro area average. As can be seen in Chart 1, those countries that during the first few years of EMU started to accumulate

above-average increases in unit labour costs have remained in the same relative position during more recent years. Moreover, in some cases, there has been a noticeable acceleration in labour cost increases in recent years.

As previously mentioned, from an accounting perspective, increases in unit labour costs are the result of higher compensation per employee or lower productivity, or a combination of both factors. Table 2 shows that the different cumulated developments in unit labour costs across the euro area countries from 1999 to 2007 appear to be largely the result of differences in the growth rates of compensation per employee rather than in productivity growth developments. However, in a few countries, the cumulated productivity growth rate over the nine-year period of reference appears to be outstandingly low, contributing to above-average increases in unit labour costs.

Finally, differences in unit labour cost developments across individual euro area countries have clearly been positively associated with differences in their HICP inflation rates over the same period. As shown in Chart 2, those

<sup>2</sup> In this section, data for unit labour costs, compensation per employee and productivity across the euro area countries have been taken from the European Commission's publicly available annual macroeconomic database. In this database, employment is measured in full-time equivalent terms in the cases of Germany, Spain, France, Italy, the Netherlands and Austria, while in the remaining euro area countries it is measured in persons. This database is updated twice a year, in spring and autumn, and is linked to the two main projections exercises conducted by the European Commission. In particular, the data shown in this article correspond to the database for the European Commission spring 2008 forecasts.

<sup>3</sup> For the purposes of this article, the time horizon for the review of the country developments starts in 1999 and ends in 2007 and is restricted to the period when the countries joined the euro area. For that reason, calculations for Greece are shown since 2001. This, however, reduces the comparability of the cumulative growth rates with other euro area countries. The use of the same starting point for these countries might not always be fully appropriate as the initial conditions for countries may differ somewhat from an equilibrium perspective. In a country-specific analysis, a different time horizon perspective may therefore be warranted. Data for Cyprus, Malta and Slovenia are not shown since these countries joined the euro area relatively recently and no meaningful cumulative rates can be calculated. Slovakia will become a member of the euro area at the beginning of 2009. However, it is important to stress that all the policy implications and lessons drawn in this article are fully applicable to all euro area countries.

**Table 2 Cumulative growth in unit labour costs, compensation per employee and labour productivity (1999-2007)**

(percentage changes)

	Unit labour costs	Compensation per employee	Labour productivity
Euro area	14.0	25.9	11.0
Belgium	14.2	27.6	11.7
Germany	2.3	17.6	15.0
Ireland	33.0	68.4	26.6
Greece <sup>1)</sup>	28.3	55.6	21.3
Spain	26.4	31.5	4.1
France	17.2	28.0	9.2
Italy	23.7	28.5	3.9
Luxembourg	24.7	40.1	12.3
The Netherlands	21.7	39.4	14.6
Austria	5.9	20.4	13.7
Portugal	27.6	39.2	9.1
Finland	11.6	32.7	18.9

Source: European Commission.

1) In the case of Greece, the cumulative growth rates refer to the period 2001-07.

countries that, over the period, had above-average unit labour cost growth rates also recorded higher-than-average inflation rates. In particular, a group of countries recorded average inflation rates of between 3.0% and 3.5%, with broadly similar above-average unit labour cost growth rates.<sup>4</sup> In other words, persistent increases in unit labour costs in some euro area countries

since 1999 have been accompanied by positive inflation differentials.

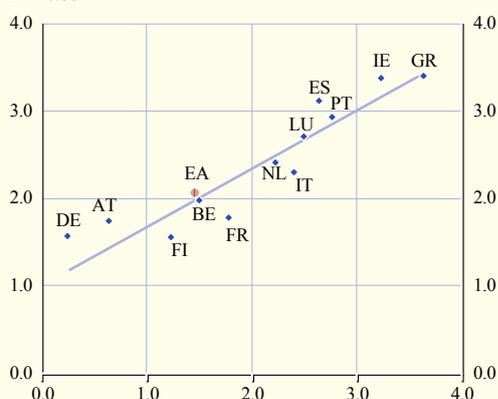
Such persistent differences in labour cost developments can have important implications for the price and cost competitiveness of individual countries. The following section reviews a number of external competitiveness measures, which take into account the trade structure of individual countries, as well as export performance indicators.

**Chart 2 HICP inflation and unit labour cost growth (1999-2007)**

(percentage changes)

x-axis: average growth of unit labour costs from 1999 to 2007  
y-axis: average growth of HICP from 1999 to 2007

$R^2 = 0.86$



Sources: European Commission and Eurostat.

Notes: The chart shows average growth since the introduction of the euro in the respective country, i.e. 2001-07 in the case of Greece. The  $R^2$  is an indicator from 0 to 1 that shows how closely the estimated trend line fits with the actual variables.

### 3 COMPETITIVENESS PERFORMANCE OF THE EURO AREA COUNTRIES: SOME STYLISED FACTS

The concept of a country's competitiveness is neither unequivocal nor straightforward to define. In a narrow sense, competitiveness often refers to international price competitiveness as measured by various effective exchange rate indicators. A second, ex post approach links the concept of competitiveness to the "external performance" of a country, thus typically examining developments in export market shares and current account balances, as well as underlying factors that may have an impact on the ability of an economy to compete in international markets. A third approach

4 For convenience, the chart shows average inflation rates. The same pattern is obtained by plotting cumulative increases in HICP inflation and unit labour cost growth rates.

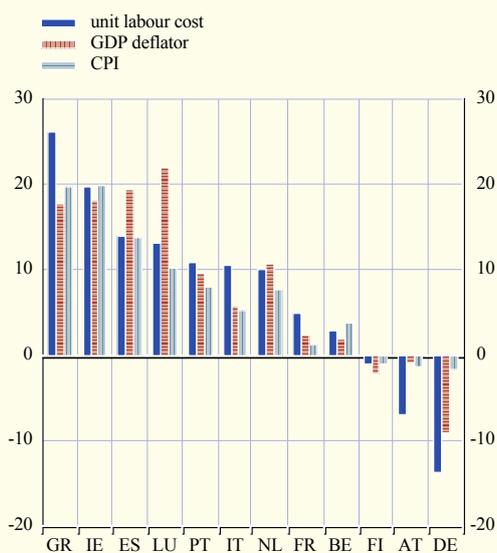
broadens the definition of competitiveness to include a notion of relative productivity – the most competitive economy being the one with the highest prospects of generating firms able to contribute to longer-term economic growth and welfare.<sup>5</sup> Thus, the first and second perspectives are explicitly concerned with the external dimension of the economy and its adjustment processes, whereas the third perspective tends to focus more on the longer-term trends in the economy. A brief examination of recent trends associated with the first two concepts now follows with a view to assessing the degree of heterogeneity among euro area countries.

### 3.1 PRICE AND COST COMPETITIVENESS

The assessment of the international price and cost competitiveness of individual euro area countries is based on the harmonised competitiveness indicators (HCIs) calculated by the ECB.<sup>6</sup> These indicators are defined as

**Chart 3 Cumulated changes in Harmonised Competitiveness Indicators (HCIs) based on total trade (1999-2007)**

(percentage changes)



Source: ECB calculations.

Notes: The HCIs based on total trade consider both intra-euro area trade and trade with a group of 22 euro area trading partners. An increase in the HCIs indicates a real effective appreciation or a decline in national competitiveness. This chart shows cumulative growth rates since the introduction of the euro in the respective country, i.e. since the first quarter of 2001 in the case of Greece. Countries are given in descending order according to the HCI based on unit labour cost.

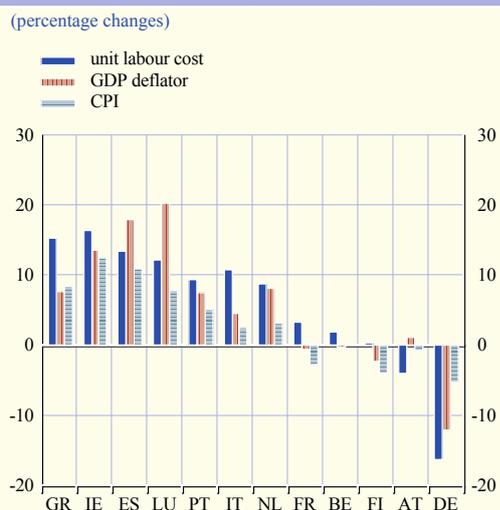
relative prices between the euro area countries and their trading partners expressed in a common currency and differ depending on the price deflator employed. They are generally considered to be more suitable as measures of competitiveness than a comparison of cumulated prices, since they take into account movements in nominal exchange rates. The weights used to aggregate the competitor countries depend on the trade structure of each country.

Overall, the harmonised competitiveness indicators suggest that there has been a sizeable degree of heterogeneity in the evolution of price competitiveness in euro area countries. In terms of total trade, the majority of euro area countries have recorded price competitiveness losses against their trading partners, which have been accentuated by the strength of the euro with respect to 1999 (see Chart 3). The magnitude of these price competitiveness losses, however, varies considerably across countries. It appears that this heterogeneity can, to a large extent, be explained by different inflationary developments at the country level rather than different trade structures.

5 The third perspective on the concept of competitiveness addresses the issue of countries' ability to generate highly productive firms that will eventually be able to compete successfully in international markets. According to this view, the international competitiveness of a country stems from the aggregation of individual domestic firms' competitiveness relative to foreign counterparts. This means that national specificities are important determinants. In particular, countries with more intense domestic market competition, better technology and higher accessibility tend to be overall more competitive. See, for example, M. Melitz and G. Ottaviano (2008), "Market size, trade and productivity", *Review of Economic Studies*, Vol. 75, pp. 295-316. See also G. Ottaviano, D. Tagliani and F. di Mauro (2007), "Deeper, wider and more competitive? Monetary integration, eastern enlargement and competitiveness in the European Union", ECB Working Paper No 847.

6 The Eurosystem has regularly published the HCIs, which are based on the CPI, as a means of providing a comparable measure of individual euro area countries' price competitiveness that is also consistent with the methodology and data sources used to calculate the real effective exchange rates of the euro. See the box entitled "The introduction of harmonised competitiveness indicators for euro area countries" in the February 2007 issue of the Monthly Bulletin. The Eurosystem has recently decided to extend, as of November this year, the publication of the HCIs to two other deflators used in the calculation of the real effective exchange rate of the euro, namely the GDP deflator and unit labour costs in the total economy. For the euro area, measures of real effective exchange rates are calculated also by using measures of unit labour costs in the manufacturing sector and the PPI.

**Chart 4 Cumulated changes in Harmonised Competitiveness Indicators (HCIs) based on intra-euro area trade (1999-2007)**



Source: ECB calculations.  
 Notes: The HCIs based on intra-euro area trade consider only trade with euro area trading partners. An increase in the HCIs indicates a real effective appreciation or a decline in national competitiveness. The chart shows cumulative growth rates since the introduction of the euro in the respective country, i.e. since the first quarter of 2001 in the case of Greece. Countries are given in the same order as in Chart 3.

In terms of intra-euro area trade, most countries have experienced some losses in price competitiveness, which have been matched by gains in a few other countries, mainly in Germany (see Chart 4). The overall result is generally robust to the choice of the indicator, i.e. whether the HCIs are based on the CPI, the GDP deflator or unit labour cost in the economy as a whole. While the qualitative conclusions remain broadly the same, the magnitude of the price competitiveness changes in some cases appears to be sensitive to the choice of the price deflator.<sup>7</sup>

### 3.2 EXTERNAL PERFORMANCE

Turning to the external performance of the euro area countries, over recent years the euro area as a whole has lost market shares. This adjustment, which is in keeping with what has taken place in other advanced countries, stems from the increasing importance of some large lower-income countries, notably China, as global traders. In order to assess intra-euro area competitiveness, it

is therefore important to compare relative changes in the market shares of euro area countries.

Export market shares are, however, not always a good proxy for the economic performance of a country. In particular, in an environment of increasing international fragmentation of production, the contribution of channels such as offshore production – which may partly substitute for trade – is not accurately reflected by relative export market shares and their evolution. All these qualifications notwithstanding, the degree of heterogeneity in the evolution of export market shares across euro area countries has been substantial. While some countries have witnessed pronounced declines since 1999, others have only been affected marginally or have even showed a tendency to gain market shares within the euro area and at the global level. Such developments appear to be partly associated with changes in price competitiveness conditions. For example, a co-movement between intra-euro area export market share developments and intra-euro area price competitiveness seems to be visible in a number of countries (see Chart 5). However, some structural factors, such as specialisation in certain industries, can also play an important role in determining export performance.

Price competitiveness is also expected to have an impact on a country's current account balance through the export channel. Although there are other factors at play in explaining the evolution of the current account, most of the euro area countries that experienced a sizeable loss in price and cost competitiveness over the

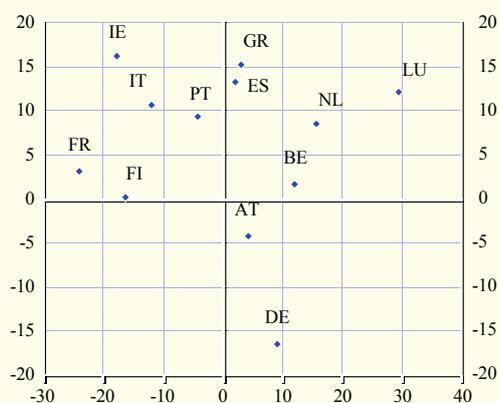
<sup>7</sup> A brief review of these indicators for the euro area can be found in the box entitled "Indicators of euro area cost and price competitiveness: similarities and differences" in the June 2005 issue of the Monthly Bulletin. For a more comprehensive discussion of the merits and drawbacks of the various indicators, see the article entitled "Developments in the euro area's international cost and price competitiveness" in the August 2003 issue of the Monthly Bulletin. For the case of the euro area, M. Ca' Zorzi and B. Schnatz (2007), "Explaining and forecasting euro area exports: which competitiveness indicator performs best?", ECB Working Paper No 833, argue that the information content in forecasting euro area export developments has been similar across different indicators.

**Chart 5 Cumulated changes in cost competitiveness and intra-euro area export market shares (1999-2007)**

(percentage changes)

x-axis: cumulative growth in intra-euro area export market shares

y-axis: cumulative growth in intra-euro area HCI (unit labour cost-based)



Sources: Eurostat and ECB calculations.

Notes: The intra-euro area HCI considers only trade with euro area trading partners. An increase in the HCI indicates a real effective appreciation or a decline in national competitiveness.

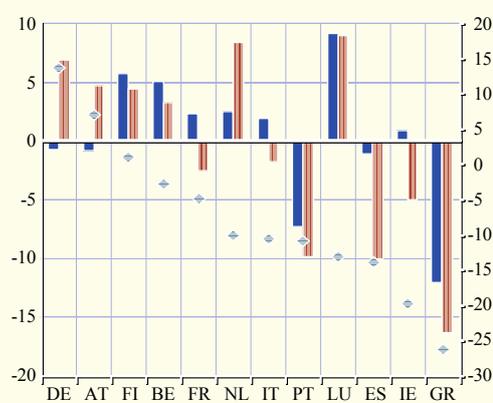
**Chart 6 Current account positions across the euro area countries and the Harmonised Competitiveness Indicator (HCI)**

(percentage; percentage changes)

■ current account as a percentage of GDP in 1998 (left-hand scale)

■ current account as a percentage of GDP in 2007 (left-hand scale)

◆ cumulated change in HCI (unit labour cost-based) between 1999 Q1 and 2007 Q4 (sign changed), (right-hand scale)



Sources: European Commission and ECB.

Notes: The initial year plotted on the chart corresponds to the year prior to the introduction of the euro in the respective country, i.e. 2000 in the case of Greece. Countries are given in descending order according to the cumulated change in the HCI (unit labour cost-based).

period 1999-2007 appear to have also seen a worsening in their current account positions. By contrast, countries that gained in price competitiveness saw an improvement in their current account positions (see Chart 6).<sup>8</sup>

In summary, the high degree of heterogeneity seen in price and cost competitiveness in the euro area countries explains some of the divergence in the external performance across euro area countries when evaluated in terms of changes in export market shares and current account positions.

#### 4 DETERMINANTS AND ADJUSTMENT PROCESSES

Persistent labour cost growth differentials may have different policy implications depending on their origins. For this reason, it is important to identify their underlying causes carefully. However, this is not a straightforward exercise, as a number of different factors – sometimes

intrinsically linked – can contribute to differences in labour cost growth. This section presents a brief overview of the main factors that may explain the existence of long-lasting labour cost differentials across euro area countries and their role in the adjustment processes.

##### 4.1 MAIN DETERMINANTS

Although various factors can be closely related and at work simultaneously, three main general categories of determinants can explain relatively strong cumulated labour costs or price increases in an individual country. First, there are factors that can be related to the real convergence and economic integration process of a country and/or to relative increases in its trend

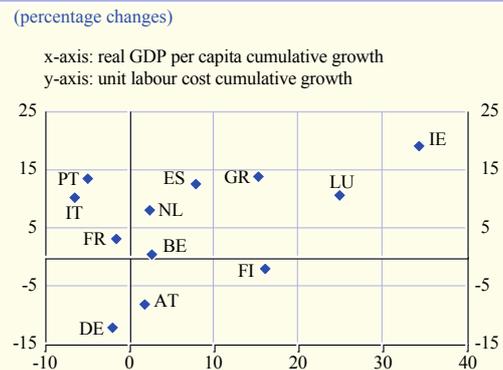
<sup>8</sup> Current account balances are also affected by many other factors that may have a more prominent role; this is the case, for instance, of Luxembourg, which has a notable positive balance in services activities. See also the box entitled “Current account balances across the euro area countries from a saving and investment perspective” in the July 2007 issue of the Monthly Bulletin.

productivity; a second group of determinants related to long-term differences in national economic structures and institutions, which mainly reflect inappropriate features associated with product and labour market policies; and third, strong and persistent demand pressures, in a context of rigid supply conditions and possibly also influenced by an inadequate fiscal stance, can create a protracted period of above-potential growth and positive output gaps, which would ultimately be reflected in an overheating domestic environment and price and labour cost pressures.

In more detail, relatively stronger increases in labour costs in an individual country can be associated with a process of economic convergence towards higher living standards or, more specifically, to relatively higher trend increases in GDP per capita.<sup>9</sup> If such trends are sustainable, higher relative price and cost levels may, to a certain extent, be in line with a change in fundamentals and, as such, no threat to future economic performance in the economy. In such circumstances, wage and price inflation differentials could appear over a limited period of time but are not necessarily inconsistent with equilibrium. In practical terms, however, it is extremely difficult to disentangle the portion of the price and labour cost differentials that reflect an adjustment to a new equilibrium level.

In the context of EMU, with the benefits from positive trade dynamics resulting from the removal of exchange rate uncertainty and, in general, integration of goods and services markets, further support can be expected for the catching-up process. However, in that process, it is essential that the external competitiveness position of the country is not significantly jeopardised by rapid and excessive increases in labour costs, which might result, in the case of adverse unexpected shocks, in a protracted period of under-performance. In other words, it is important that such convergence takes place in a sustainable way, avoiding the build-up of large imbalances that may lead to a “boom-bust” process.<sup>10</sup>

**Chart 7 Cumulative growth in real GDP per capita and unit labour costs relative to the euro area (1999-2007)**



Source: ECB calculations based on European Commission data.  
Note: The chart shows cumulative growth differences with respect to the euro area since the introduction of the euro in the respective country, i.e. in the period 2001-07 in the case of Greece.

Chart 7 helps determine whether strong cumulative real GDP per capita increases in the period 1999-2007 in the euro area countries, as a proxy for capturing relative improvements in living standards, might to some extent explain the strong cumulated increases in unit labour costs previously discussed in this article. As can be seen, the relationship appears to be very heterogeneous. Most of the countries appear to be grouped around a vertical line (close to the y-axis), most likely indicating that other factors, rather than differences in GDP per capita developments, may also help to explain the different performances in terms of unit labour costs. In particular, there is a group of countries, on the upper left-hand side panel of the chart, indicative of below-average growth in GDP per capita accompanied by strong cumulative labour cost increases. In these cases, there appears to be a significant probability that, since 1999, non-sustainable increases in relative labour costs have been accumulated, with negative consequences for GDP per capita prospects.

<sup>9</sup> There is some evidence that most of the convergence of wage levels across the euro area countries took place before 1999, especially in the 1980s, broadly coming to a halt after the start of Stage Three of EMU. For a more detailed analysis, see M. Andersson et al. (2008), “Wage growth dispersion across the euro area countries: some stylised facts”, ECB Occasional Paper No 90.

<sup>10</sup> For further discussion on asset prices, see the article entitled “Asset price bubbles and monetary policy” in the April 2005 issue of the Monthly Bulletin.

A second category of determinant, relating to certain institutional factors in the product and labour markets, may also have contributed to the different cumulative developments seen in labour cost growth across the euro area countries. A lack of flexibility in product and labour markets can create, in the case of adverse shocks, persistent relative price and cost increases in the countries affected. The close link between the persistence of wages and inflation may be related to certain institutional factors, e.g. wage indexation.<sup>11</sup> Such indexation can lead to substantial downward wage rigidities. Since wages are important determinants of prices, backward-

looking wage indexation enables temporary price or cost shocks to initiate wage-price spirals, leading to persistent wage and price deviations from the euro area average.<sup>12</sup> As explained in more detail in Box 1, this is particularly the case in situations where external shocks hit the economies of the euro area.

11 See M. Andersson et al. (2008), "Wage growth dispersion across euro area countries: some stylised facts", ECB Occasional Paper No 90.

12 See the box entitled "Wage indexation mechanisms in euro area countries" in the May 2008 issue of the Monthly Bulletin.

### Box 1

#### THE COSTS OF SECOND-ROUND EFFECTS IN THE CASE OF EXTERNAL PRICE SHOCKS

The impact of external economic shocks across individual euro area countries depends, to a large extent, on the reactions of economic agents and, in particular, of social partners interacting in the labour market. This is particularly important in the current situation of heightened external cost pressures that stem from higher commodity, energy and food prices. Under such circumstances, and to the extent that inflationary expectations are not credibly anchored, there is a risk that economic agents in an individual country may try to raise the prices of the goods and services they supply in the market in order to catch up with cost developments and/or losses in purchasing power. However, such second-round effects are likely to result in more protracted and stronger price increases and output losses than could have been explained by the first-round effect of the initial external cost-push shock.

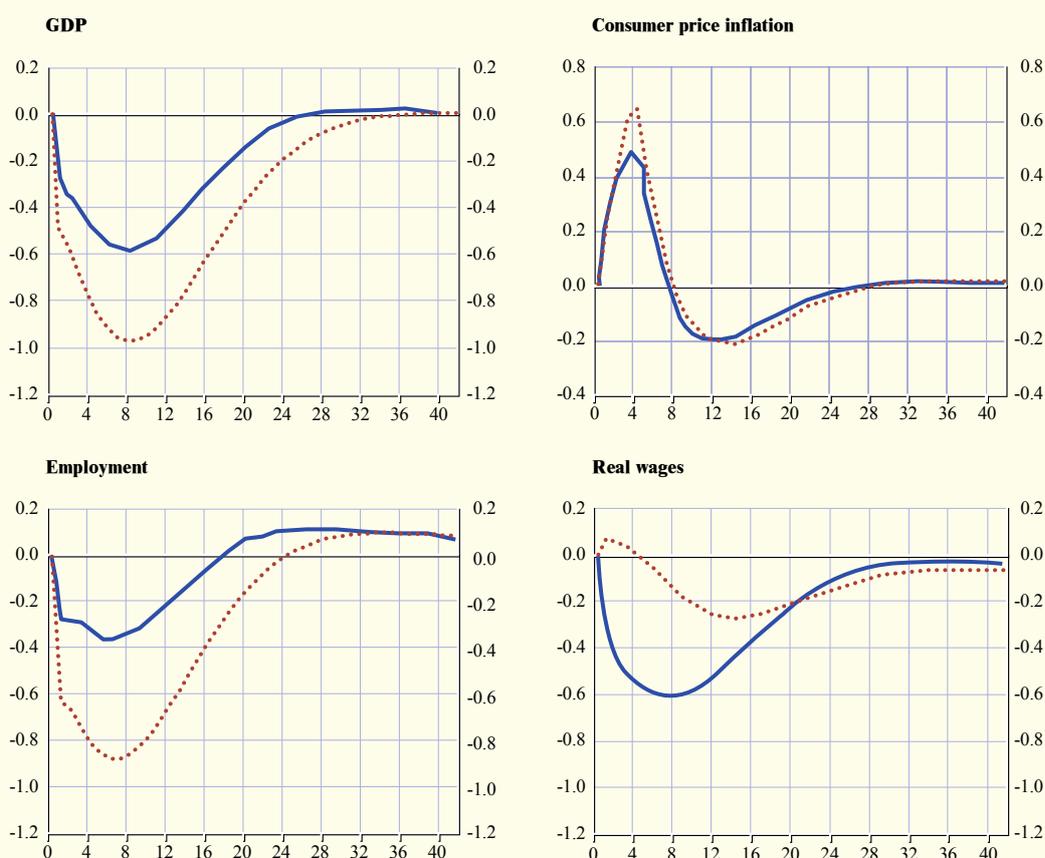
In a situation of external cost increases, higher nominal wages are often called for with a view to compensating employees for the higher cost of living and to protecting households against real income losses. The extent to which wage-setters may strive for, and are capable of achieving, higher nominal wages in a country depends on the structural and institutional features of the economy. However, the macroeconomic impact of higher nominal wages in response to external cost increases depends on the interaction of prices and wages with other economic variables. Against this background, this box analyses the implications of higher nominal wage claims in response to an external cost-push shock in the context of a DSGE model. The model, which is an extended version of the New Area-Wide Model (NAWM), is calibrated to represent four countries or regions in a stylised way, namely an individual large euro area country, the rest of the euro area, the United States and the rest of the world.<sup>1</sup> It builds on recent advances in developing micro-founded DSGE models suitable for quantitative policy analysis. Thus, economic decisions of households and firms are rigorously modelled as

1 See G. Coenen, P. McAdam and R. Straub (2007), "Tax reform and labour market performance in the euro area: a simulation-based analysis using the New Area-Wide Model", ECB Working Paper No 747.

## Adjustment dynamics in a stylised euro area country in response to an external cost shock

(percentages; quarters)

— cost-push shock  
 ..... cost-push shock plus wage increase



Notes: This chart depicts the quarterly adjustment dynamics of selected economic variables in a stylised euro area country in response to an external cost-push shock resulting from a temporary increase in export prices in the rest of the world. The effects of a pure cost-push shock (solid line) are compared with a scenario of an accompanying compensatory increase in wages (dotted line). Consumer price inflation is reported as deviations from year-on-year percentage changes. The other variables are reported as percentage deviations from the levels obtained in the baseline scenario.

utility or profit-maximising choices in a general equilibrium setting. Furthermore, the model incorporates several nominal and real frictions in an effort to improve its empirical fit. Both households and firms are assumed to act as wage and price-setters with some degree of market power.

The external cost-push shock is introduced into the model as a temporary increase in export prices in the rest of the world. This shock has been calibrated so as to give rise to a transitory impact in year-on-year consumer price inflation in the individual euro area country of about 0.5 percentage point, gradually declining thereafter. Consequently, inflation increases in the short run and declines thereafter, reflecting the economic slack caused by the adverse shock. The effects of this pure external cost-push shock are then compared with a scenario of an accompanying compensatory increase in nominal wages of 0.5% in the individual euro area country.

As shown in the chart, the wage increase significantly worsens the negative effects of the external cost shock on output and employment compared with the benchmark case that considers the external cost shock alone. The negative impact on output derives primarily from the adverse impact of higher real wages on employment. Thus, while employees succeed in temporarily increasing their real wages, it will bring about significant and more protracted losses in employment and output. The loss in employment following the adverse external cost shock is more than twice as large when, at the same time, nominal wages are increased. Inflation is also higher in the short term. The analysis shown in this box therefore stresses the need to set wages in line with domestic economic conditions. If social partners increase wages as a response to an external cost shock without taking into account domestic market conditions, they may worsen the competitiveness situation of their country and eventually substantially aggravate the initial unfavourable impact of such a shock on employment and output.

Additionally, in some cases the public sector may provide a signal for wage bargaining in other sectors, irrespective of local labour productivity developments, labour market conditions or the profitability of firms. Moreover, wage bargaining in sectors that are not directly exposed to external competition may fail to take the competitiveness situation of the country sufficiently into account. This may also create some inertia in wage increases and therefore persistence. In these cases, rising relative wage and price levels can be associated with negative prospects for job creation and growth.

Finally, an economy can suffer a long period of strong demand pressures. These pressures may initially be related to either country-specific demand shocks or an excessive reaction to common shocks, accompanied by the overly optimistic expectations of consumers or firms regarding future income prospects. This situation may be accompanied or intensified by an insufficiently tight fiscal stance. Typically, if there are strong demand pressures, the authorities may mistakenly take a cyclical expansion to be an upward shift in potential output. Such a situation is likely to lead to an inflationary process and cumulated losses in competitiveness. Moreover, it can result not only in pressures on goods and services prices but also in asset price inflation, notably in housing markets.

The negative domestic consequences of excessive price and labour cost inflation for

employment and output may be temporarily counterbalanced by such persistent strong domestic demand or housing booms. In these cases, the relatively stronger increases in prices and labour costs may initially appear to be accompanied by an increase in living standards. However, the accumulation of relative losses in competitiveness and the build-up of domestic imbalances will, at some point, have to be corrected. The potentially large costs related to a correction of imbalances – a major negative impact on output and employment – may only materialise with some lag, once the economy is in a process of slowdown, possibly coupled with an adjustment in the housing sector. Should the economy also suffer from structural rigidities in product and labour markets, particularly downward wage rigidities, a protracted and painful adjustment process in output and employment could then finally take place.

#### 4.2 CROSS-COUNTRY ADJUSTMENT PROCESSES

In a monetary union such as the euro area, with a single currency and a single monetary policy, the main adjustment mechanism – in the absence of a high degree of labour mobility across countries, sufficient “risk-sharing” across borders and a cross-country fiscal transfer system – is the competitiveness channel. The competitiveness channel is generally seen as the most important equilibrating mechanism. If, for example, a country in a monetary union experiences unsustainable domestic inflationary pressures,

e.g. owing to increases in wages and other domestic costs, these pressures will lead to the gradual accumulation of external competitiveness losses and, over time, a reduction in foreign demand for the country's exports. The resulting decline in demand for the country's output will tend to restore output to its potential level and to dampen previous inflationary pressures. The working of this adjustment mechanism through the competitiveness channel would be enhanced in an environment of highly integrated labour and product markets in the euro area. However, available evidence suggests that, in the euro area, as a result of structural rigidities and a lack of full implementation of the Single Market, this key equilibrating mechanism requires a relatively long period to work through.<sup>13</sup>

A high degree of downward price and wage flexibility is therefore particularly important for the competitiveness channel to work because it could help national labour markets

to adjust to economic shocks and would facilitate the efficient allocation of labour and other resources.<sup>14</sup> Greater detail is provided by Box 2, which investigates how different degrees of wage rigidity in a country can be crucial in explaining the adjustment process of that country within a monetary union and, in general, emphasises the key role played by the structure of the labour market in reducing the burden for employment and in speeding up the adjustment in the case of adverse shocks hitting the economy.

13 See the article entitled "Output growth differentials in the euro area: sources and implications" in the April 2007 issue of the Monthly Bulletin and also European Commission (2006), "The EU economy 2006 review – Adjustment dynamics in the euro area: experiences and challenges", European Economy 6.

14 Price and wage dynamics have been studied in depth in the context of the Eurosystem Inflation Persistence Network and the Eurosystem Wage Dynamic Network, two research networks comprising euro area NCBs and the ECB. See, in particular, the material available on the ECB's website at <http://www.ecb.europa.eu/events/conferences/html/inflationpersistence.en.html> and [http://www.ecb.europa.eu/events/conferences/html/wage\\_dynamics\\_network.en.html](http://www.ecb.europa.eu/events/conferences/html/wage_dynamics_network.en.html).

## Box 2

### ADJUSTMENT PROCESSES AND LABOUR MARKET INSTITUTIONS – A MODEL PERSPECTIVE

The euro area is characterised by large cross-country differences in employment protection legislation and wage-setting institutions, such as the degree of centralisation and coordination of wage bargaining, the extension of agreements to other workers, contract duration, etc. These distinct features can generate cross-country differences in the way employment and wages adjust to changing economic conditions. This box analyses how different degrees of wage rigidity affect adjustment processes within a monetary union, with special attention to downward nominal and real wage rigidities. In many countries, wages exhibit resistance against cuts in nominal and/or real terms, while wage increases are less rigid as empirical evidence from the Eurosystem Wage Dynamics Network indicates.<sup>1</sup> Such structural rigidities, including asymmetries between countries and between wage cuts and increases, create differing adjustment dynamics across countries for other economic variables, especially employment and inflation. The phenomenon of inflation differentials and their persistence has been documented by a number of authors, e.g. Angeloni and Ehrmann (2007), whereby the heterogeneity in the national labour markets and/or wage adjustment rigidities is one of the main reasons for inflation persistence. Indeed, as formalised in Abbritti and Mueller (2007), rigidities in wage-setting imply higher persistence

1 Within the Eurosystem Wage Dynamics Network, Du Caju, Gautier, Momferatou and Ward-Warmedinger (2008) have compiled an overview describing labour market institutions in the European Union (see [http://www.ecb.europa.eu/events/conferences/html/wage\\_dynamics\\_network.en.html](http://www.ecb.europa.eu/events/conferences/html/wage_dynamics_network.en.html)).

in inflation differentials between countries following asymmetric productivity shocks within a monetary union. In addition, they generate larger unemployment following union-wide adverse technology shocks and make macroeconomic stabilisation by monetary policy more difficult.

In a recent contribution to the Eurosystem Wage Dynamics Network, Fahr and Smets (2008) analysed the transmission of productivity shocks within a monetary union in the presence of different degrees of either downward nominal wage rigidity or downward real wage rigidity between countries.<sup>2</sup> If the monetary union is hit by a common negative productivity shock, real wages should fall to reduce production costs. However, if real wages cannot adjust downwards following a negative productivity shock, the demand for labour falls and generates a slump in employment for the more rigid country. Furthermore, the country in which wages are indexed to prices, i.e. characterised by downward real wage rigidity, shows higher inflation and wage rates following a positive, as well as a negative, aggregate shock. The country with downward real wage rigidities is thereby characterised by higher inflation and lower employment, creating a strong and persistent effect for inflation differentials. In all these cases, inflation differentials result from structural rigidities in labour markets.

An asymmetric shock that only affects one region inevitably also has nominal and real effects for the other regions in the monetary union. These effects come through the relative price levels of the two regions and the impact on union-wide interest rates. The adjustment between the two regions (or countries) in this case is strongly affected by the degree of financial and economic integration and price flexibility.

Comparing the implications of the different models, it can be concluded that any policy measure leading to a reduction in real wage rigidities (e.g. a reduced degree of price indexation of wages) substantially reduces the impact of economic shocks on employment. At the same time, lower wage rigidities shift the burden of the adjustment from the real economy to nominal variables and improve the stabilisation possibilities for monetary policy. Reducing the degree of downward wage rigidity within the euro area, especially real wage rigidity, further reduces the persistence in inflation and wage differentials and reduces the detrimental effects of adverse shocks on employment.

<sup>2</sup> Downward nominal wage rigidities may induce a positive bias for inflation, so-called “grease inflation”, a term originally used by Tobin in his presidential address 1971.

References: Abbritti, M. and A. I. Mueller (2007), “Asymmetric labour market institutions in the EMU: positive and normative implications”, Economics Working Paper, Central Bank of Iceland, 37.

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Tobin, J. (1972), “Inflation and unemployment”, *American Economic Review*, 62(1), 1-18.

## 5 POLICY IMPLICATIONS AND CONCLUSIONS

Cross-country differentials in price and labour cost developments can be, to some extent, a normal and unavoidable feature of monetary unions. However, in some cases they reflect unsustainable losses in competitiveness that have negative consequences for employment and output prospects. In a monetary union the central bank does not possess the necessary instruments to address such differentials. More importantly, any such attempt would be at odds with the principles of well-functioning currency areas (see Box 3). To support necessary adjustments following economic shocks and

to facilitate a smooth reallocation of activities over time, across sectors and, importantly, also within and between countries, it is vital that the ECB remains firmly committed to delivering price stability over the medium term for the euro area as a whole. Country-specific price and labour cost dynamics that result from relatively inefficient institutional arrangements or domestic policies need to be addressed by national policy-makers. Such action would also support other countries in the euro area, as moderate overall price and labour cost developments are of utmost importance to support monetary policy in its task of achieving price stability for the euro area as whole.

### Box 3

#### THE ECB'S MONETARY POLICY STRATEGY AND CROSS-COUNTRY DIFFERENTIALS

Cross-country differentials in price and labour cost developments may pose a number of questions for the appropriate conduct of monetary policy. This box lays out strategic principles that the literature on monetary unions has developed.

First, while the existence of heterogeneous regions within a monetary union increases the number of relative prices that may be relevant for national policymaking, in order to facilitate an efficient allocation of activities in the union it is crucial that monetary policy be unambiguously committed to stabilising area-wide inflation rates. This reasoning naturally follows from the important distinction between movements in relative prices and the average price level. Monetary policy cannot affect any particular pattern of relative prices within an economy. Given the large number of prices in a monetary union, it is therefore of overriding importance that monetary policy focuses on maintaining area-wide price stability, thereby offering the crucial nominal anchor for all economic decisions within and between regions. By offering this anchor, monetary policy provides the single most important signalling device available in market-based economies.

Second, in principle, equilibrium inflation rates may differ across countries for some periods of time because of different productivity developments, without endangering the competitiveness of economies. Nevertheless, the scope for such divergences in national inflation rates should be limited in monetary unions that make the adoption of the common currency by new members conditional on a high degree of macroeconomic convergence.

Third, differences in institutional features may imply that member countries exhibit different degrees of inflation persistence in response to certain shocks. In this context, it is sometimes argued that countries characterised by more persistent inflation dynamics should receive a greater weight in the considerations of the central bank. To some extent, this reasoning can

be linked to the view that movements in those components of the price index that exhibit a high degree of inflation inertia are of particular concern for monetary policy-makers. However, it is also clear that this reasoning – apart from substantial identification and communication challenges – entails a second-best element: to the extent that persistent inflation dynamics reflect country-specific inefficiencies, these features should be addressed by national structural policies and they should not be accommodated by monetary policy. Similarly, from a political economy perspective, the incentives for countries with rigidities to undertake needed reforms should not be diluted.

Fourth, notwithstanding its clear focus on maintaining area-wide price stability, it is useful for monetary policy to take regional and country-specific information into account, rather than to look only at aggregate information. This principle is related to the argument that different shocks may imply different future inflation patterns and require different policy reactions. Similarly, the comprehensive use of disaggregated information naturally helps to improve the understanding of the underlying sources of inflationary developments.

The monetary policy strategy of the ECB is in line with these broad recommendations.<sup>1</sup> This is most visibly manifested in the ECB's primary objective of maintaining price stability for the euro area as a whole. Furthermore, the ECB also uses regional and country-specific information in its internal analysis, as most prominently seen in the preparation of the Eurosystem/ECB staff macroeconomic projections.

<sup>1</sup> For detailed references, see the article "Monetary policy and inflation differentials in a heterogeneous currency area" in the May 2005 issue of the Monthly Bulletin, "Background studies for the ECB's evaluation of its monetary policy strategy", ECB (2003), and the June 2008 Special Edition of the Monthly Bulletin on the occasion of the tenth anniversary of the ECB.

Despite some progress, most euro area countries still exhibit structural impediments triggered by a rigid legal and regulatory environment, high taxes on labour and rigidities associated with wage regulations. Therefore, in order to enhance employment, productivity and the resilience to economic shocks, it is particularly important for economic policy in the euro area countries to be developed further in the following dimensions.<sup>15</sup>

First, with respect to labour market policies, governments and social partners must share responsibility for ensuring that wage determination pays sufficient attention to local labour market and productivity conditions and does not jeopardise competitiveness and employment. This requires the social partners to take into account the different conditions at firm and sectoral level when setting wages. In this respect, accumulated large competitiveness losses and levels of unemployment should be

taken into account in wage setting and limit the scope for exhausting labour productivity gains.

Under such circumstances, inadequate policies or labour market institutions that could result in wage increases as a response to a cost-push shock would further contribute to the inflationary impact of such shocks and may finally give rise to more protracted and stronger price increases than could have been explained by the first-round effect of the initial cost-push (see also Box 1 in the previous section).

Therefore, broad-based second-round effects stemming from the impact of higher energy and food prices on price and wage-setting behaviour must be avoided. In particular, schemes in which nominal wages are indexed to consumer prices should be abolished.

<sup>15</sup> See also the chapter entitled "Economic challenges and enlargement" in the June 2008 Special Edition of the Monthly Bulletin on the occasion of the tenth anniversary of the ECB.

Such schemes involve the risk of upward shocks in inflation leading to a wage-price spiral, which would be detrimental to employment and competitiveness in the countries concerned.

Second, the proper functioning of adjustments through product and labour markets across the euro area countries calls for the completion of the Single Market, particularly in services and network industries. A deeper integration of markets is crucial to stimulate price flexibility by fostering competition and opening product and labour markets. Greater cross-border competition and the integration of markets across the euro area countries would substantially contribute to speeding up the adjustment in case of adverse shocks.

Third, national authorities can make a substantial contribution to more modest labour cost developments. In particular, public wage-setting should not contribute to strong overall labour cost growth and competitiveness losses. Moreover, as high labour cost growth may partly reflect an overheating of the economy, a prudent fiscal stance is particularly important.<sup>16</sup> Structural budget balance estimates typically tend to overstate the strength of the underlying budgetary position during periods of high growth and associated asset price increases. This is especially so if government revenues are boosted by strong growth in the “tax rich” components of GDP (e.g. domestic demand) and/or by the value and number of property transactions and capital gains. In such cases, allowing a sufficiently large fiscal surplus to build up may be wise not only because it may help to mitigate overheating pressures but also because it will create an adequate safety margin in case of a sudden reversal of revenue trends. Such a policy should be seen as allowing the automatic fiscal stabilisers to operate rather than as discretionary fiscal policy, which in the past has been shown as an inappropriate instrument for responding to cyclical fluctuations.

And fourth, in the context of the Lisbon Strategy, the necessary reforms that enhance competition and improve long-term growth prospects in the euro area must be implemented. Moreover, price and wage flexibility, as well as an efficient working of the internal market, is a prerequisite in order to avoid a situation where, after suffering a specific shock, a country or a region in the euro area enters either a period of protracted low growth and high unemployment or a long period of overheating. This would improve the adjustment mechanisms in individual countries and therefore be an important factor in improving the overall resilience to economic shocks of the euro area economy. Overall, such reforms would tend to reduce inflationary pressures and enhance long-term employment prospects.

To conclude, developments in price and unit labour cost competitiveness indicators across the euro area economies must be closely monitored. Persistent losses in relative cost competitiveness can relate to different factors. Of these, the combination of strong demand pressures and a number of structural rigidities in the product and labour markets are of particular concern, since they can lead to inertia in price and wage formation and result in persistent price and wage inflation in a country. From the perspective of euro area-wide cost developments, there is a need for more disciplined nominal wage developments in countries that need to gain in competitiveness inside the euro area. It is the responsibility of the national authorities and all social partners to continuously ensure a proper and smooth functioning of the euro area.

The ECB has repeatedly pointed to the need to monitor closely competitiveness in the euro area countries as part of the policy processes related to the economic governance of the euro area.

<sup>16</sup> For a largely conceptual point of view on the appropriate design between monetary and fiscal policies in currency areas, see the article entitled “One monetary policy and many fiscal policies: ensuring a smooth functioning of EMU” in the July 2008 issue of the Monthly Bulletin.

The European Commission recently reached the same conclusion when proposing a broadening of macroeconomic surveillance.<sup>17</sup> Enlarging the scope of surveillance to include monitoring competitiveness developments in the individual euro area countries should help highlight the prominence of this issue in policy discussions at the European and national levels. A regular competitiveness review is therefore highly welcome from an ECB perspective. The results of such a review should be appropriately communicated to the public at large to raise awareness about competitiveness problems.

17 See European Commission (2008), "EMU@10: successes and challenges after 10 years of Economic and Monetary Union", European Economy February 2008.