

Inflation Differentials in Europe: Past Experience and Future Prospects

This paper analyzes past and potential inflation differentials for current EU Member States and the acceding countries. Although inflation differentials decreased significantly over the last ten years or so within the EU-15/EU-12 and the acceding countries, they are still on top of the policy agenda. Indeed there are a number of potential causes of inflation differentials. They range from cyclical factors via the exchange rate pass-through and oil price shocks to differences in productivity advances and changes in indirect taxes. Regarding the impact of these factors on inflation, a number of similarities can be found across countries. At the same time, because differences exist, e.g. in the cyclical position, the degree of openness, oil intensity or dependency as well as price and productivity levels, inflation differentials are not likely to vanish completely in the future. We also argue that the often cited catching-up factors, such as the Balassa-Samuelson effect, seem to be considerably weaker than generally believed. In addition, inflation differentials could be clearly associated with inappropriate national fiscal and structural policies.

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I Introduction

In April 2003, a Big Mac at McDonald's cost, according to *The Economist's* Big Mac index, in the euro area EUR 3.24, and the corresponding price in Denmark was EUR 4.47. At the same time, one had to pay only about half when buying the same very standardized product in Slovakia, Hungary, Poland, Estonia, Lithuania or the Czech Republic.² This phenomenon reflects not only the substantial undervaluation of the acceding countries' currencies in terms of purchasing power parity but also roughly illustrates differences in price levels and in relative prices.

In general, different price levels may result in differing inflation rates. This phenomenon can be observed not only across countries but also across regions, cities or even city districts. The reasons for inflation differentials can indeed be manifold: They may be the outcome of different cycles, noncompetitive market structures, structural rigidities, different consumer preferences or cost structures and depend on the location (e.g. transportation costs, local taxes). They can be supply or demand driven.

In the long run, however, there are several mechanisms working into the opposite direction, helping reduce these differentials. In the European Union these are for instance the completion of the internal market, the reduction of subsidies, the dismantling of structural rigidities and, most recently, the introduction of the single currency.

In the European Union (EU), inflation differentials had not been a major issue for decades. They had more or less been taken for granted, given that the Community had always included both highly industrialized countries and catching-up countries. But the existing inflation differentials were not only the outcome of different levels of economic development; they also reflected different economic policies. In wage policies, one example was Italy with its *scala mobile*, which kept wage-price spirals going, instead of limiting wage increases to productivity gains. As to exchange rate regimes, there was the hard-currency bloc, which successfully maintained price stability most of the time, and, on the other hand, there were those countries which

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² Slovakia: EUR 1.92; Hungary: EUR 2.38; Poland: EUR 1.77; Estonia: EUR 2.26; Lithuania: EUR 2.25; Czech Republic: EUR 2.14. Source: www.economist.com/markets/Bigmac. The prices provided in USD are converted in euro using the EUR/USD exchange rate as of April 2003.

were aiming to gain competitiveness by depreciating their currencies and, as a result, were faced with two-digit inflation rates. Although this policy had adverse effects on the main trading partners, the resulting inflation differentials as such were not a major policy concern.

In the beginning of the 1990s, when the idea of a monetary union was taking shape, inflation differentials became a matter of widespread concern. How can this sudden interest be explained? In a monetary union there is only one interest rate, which is set on the basis of an area-wide assessment of economic conditions. If the level of inflation is found to deviate from the desired level in individual countries, it has to be dealt with using completely different instruments, for instance fiscal or structural policy measures, at the national level.

Whether or not a monetary union does become a success story depends on several conditions. On a general basis, the more member states trade with each other, the larger the gains are from eliminating nominal exchange rate fluctuations. Nevertheless, in the absence of synchronized business cycles among member states and because of asymmetric demand and supply shocks, the costs of irrevocably fixing the currency may exceed the gains stemming from an increased stability of the business environment. However, business cycles should get increasingly synchronized after the launch of the currency union if intra-industry trade is sufficiently high among member states and capital and labor factor mobility can help member states to adjust to asymmetric shocks. Hence, it appears that high intra-industry trade, efficient capital and flexible labor markets are key to a smoothly functioning monetary union.

In the run-up to Economic and Monetary Union (EMU), when inflation rates were squeezed, inflation differentials became smaller, too. The reason was a more stability-oriented overall macroeconomic policy, including, for instance, a restrictive fiscal policy to meet the fiscal convergence criteria, a productivity-oriented wage policy as well as participation in the exchange rate mechanism.

Recently several studies by international institutions (IMF, 2001 and 2002, OECD, 2002) expressed concern about widening inflation differentials in the years since the beginning of EMU. The present study in a first step reassesses the past evolution of inflation differentials in the euro area and investigates the possible underlying reasons. Several recent studies deal with the phenomenon of inflation differentials in highly industrialized countries (ECB, 2003), but they usually do not refer to EU enlargement. Since ten countries will join the EU in May 2004, it is, however, of major interest to assess future challenges and to broaden this investigation. The present study therefore incorporates the acceding countries into the analysis. The purpose is not to judge to what extent they already fulfill the Maastricht inflation criterion, given that the enlargement of monetary union is not just around the corner and there are a few other criteria to be met. Rather, a look at inflation differentials will be taken within a hypothetically enlarged euro area with respect to future policy challenges.

Inflation differentials are interesting from a general economic point of view because they are closely related to the evolution of the real exchange rate and thus to competitiveness and also relevant for capital movements. In particular, the acced-

ing countries may have deviating inflation rates when compared with current euro area countries, given differences in the Balassa-Samuelson effect and in the share of services and administered prices in the Consumer Price Index (CPI).

The remainder of the paper is as follows: Chapter 2 describes inflation differentials in the past by extending statistical measures to a hypothetically enlarged area of EU-15+10. Chapter 3 investigates underlying reasons for inflation differentials, such as cyclical and external factors, and factors related to the convergence of price levels. Finally, Chapter 4 concludes.

2 Inflation Differentials: Past Evidence

Recently there have been increasing concerns about worrisome inflation divergence in Europe. This section will first describe the inflation differentials in the current euro area. In a further step, however, a more forward-looking perspective is taken by also calculating inflation divergence measures for a hypothetically enlarged euro area. This will allow us a forward view on the upcoming policy challenges.

2.1 Inflation Differentials in the Euro Area

Chart 1 illustrates the change in inflation differentials in the euro area with several divergence indicators for the period 1990 to mid-2003. First, the spread is used, defined as the difference between the highest and the lowest national inflation rates. The

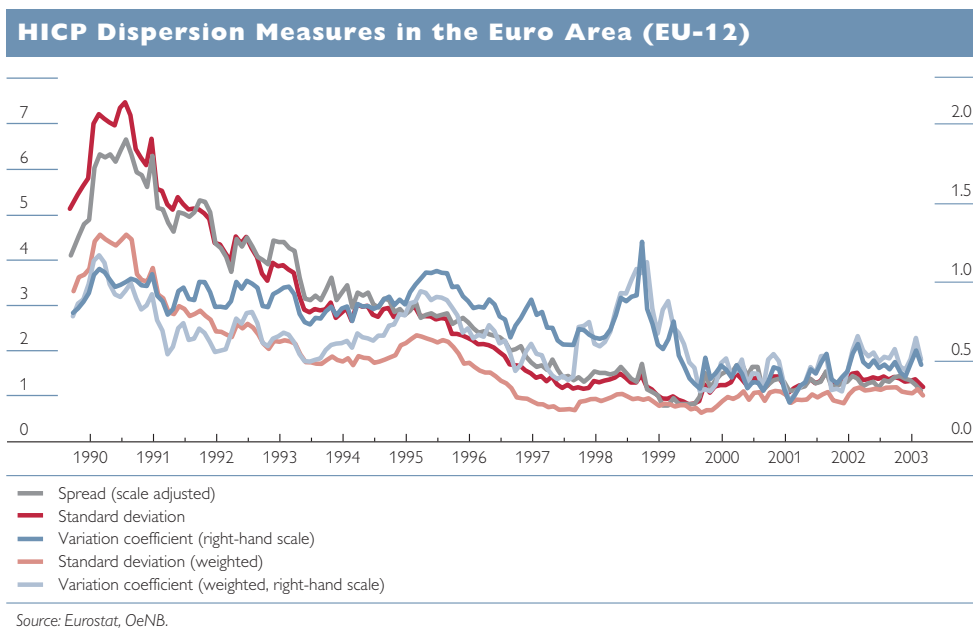
spread (grey line, scale adjusted³) decreased dramatically from up to 20% at the beginning of the 1990s to around 1% in mid-1999, followed by a comparatively limited increase of inflation differentials in early 2000. Ever since then it has remained in a range of between 3% and 4%. As the spread is highly sensitive to single outliers and does not allow for a weighting of the observations, a high inflation rate in one small country can have a major impact on this dispersion measure.

The standard deviation is another measure of inflation differentials. The dark red line in chart 1 for the 12 euro area countries tells a similar story like the spread, although at a different level: according to this measure, dispersion decreased dramatically until mid-1999, increased thereafter and has remained stable at a level of slightly above 1% since mid-2000. A useful variant is the variation coefficient, defined as the ratio of the standard deviation to the mean of inflation. The superiority of this measure is based on the observation that inflation differentials tend to increase in times of high average inflation rates. An intuition is for example that the pass-through of an oil price increase will be most pronounced in countries that already show overheating tendencies. The standard deviation may therefore overestimate the inflation differentials.⁴ The variation coefficient allows investigating inflation differentials independent of such scale effects. The smoother path of the dark blue line in chart 1 supports the assumption

³ Divided by 3.

⁴ The use of the variation coefficient entails a statistical problem in so far as it can take huge values whenever the average inflation rate (i.e. the denominator of the ratio) approaches zero. In the euro area, however, values close to zero were not observed for the inflation rate during the sample period so that this problem is not an issue here.

Chart 1



of a positive relationship between inflation dispersion and average inflation. The spike around January 1999 is attributable to a relatively high standard deviation while average inflation was relatively low. This measure of dispersion does therefore not report an increase in inflation dispersion during 1999. In the last year of our sample, however, there seems to be some level shift in the measure.

These unweighted measures are still very sensitive to divergent developments in small countries. An alternative is to use the weighted standard deviation and variation coefficient, which weights observations according to their nominal GDP. These dispersion measures better reflect the geographical dimensions and the potential impact on the euro area economy. In the case of the weighted standard deviation (light red line) the high inflation dispersion in the first half of the 1990s is far less pronounced, which reveals that relatively small countries play a big role in inflation dispersion. The increase in the standard deviation

at the end of 1999 is now far less pronounced and much flatter. The weighted variation coefficient (light blue line), the measure that takes into account different sizes of the economies as well as level shifts, again does not show any such increase but a slight level shift since mid-2002.

This analysis suggests that a huge part of inflation dispersion at the beginning of the 1990s can be traced to developments in relatively small countries. Their national inflation rates explain to a large extent the decreasing trend in the unweighted measures. This leads to the conclusion that dispersion measures that neglect country sizes may overestimate inflation differentials. The other finding is that the slight increase in inflation dispersion at the end of 1999 can be attributed to higher average inflation, reflecting sharp increases in oil prices. Taking into account this level effect, no evidence could be found for an increased inflation divergence at the end of the 1990s.

2.2 Inflation Differentials in a Hypothetically Enlarged Euro Area

In view of the forthcoming enlargement of the EU and the envisaged adoption of the euro in the acceding countries in the medium term, it is of interest to calculate a measure for inflation dispersion also for a hypothetically enlarged euro area. Chart 2 shows one of the most sensible divergence measures – the weighted standard deviation – for the EU-12 (the euro area countries), for the EU-15 (all current EU Member States) and for the EU-15+10 (i.e. in-

cluding the acceding countries, data available as of 1997).⁵ This should in no way be seen as a claim that these countries are ready for euro area membership. Before adopting the euro, they will have to achieve a high degree of fiscal and monetary stability by fulfilling the Maastricht convergence criteria. One of these criteria calls for an inflation rate which is no more than 1.5 percentage points above that of the three best performing Member States. Only those countries that already show a sufficient degree of price stability will be allowed to adopt the euro.

Chart 2

Weighted Standard Deviation by Region: EU-12, EU-15 and EU-15+10



Source: Eurostat, OeNB.

The message that can be drawn from chart 2 is that the development of inflation differentials since mid 2001 within a hypothetically enlarged euro area does not differ substantially from the evolution of inflation differ-

entials in the 12 current euro area countries alone. EU inflation dispersion remained below the corresponding euro area measures for the major part of our data sample, however with a narrowing gap. The permanently

⁵ To be precise the EU-15+10 measures were calculated with data of 24 countries only due to the lack of HICP data for Malta. Because of the small GDP weight of Malta this should not limit the information content of the measures.

lower GDP-weighted standard deviation for the EU-15 can be attributed to the fact that inflation rates in the three nonparticipating EU Member States did not show any extreme developments in the past. Since the end of the 1990s there has been no significant difference between the two measures.

For the EU-15+10 the dispersion measure was significantly higher between 1997 and 2001, when the acceding countries still experienced two-digit inflation rates. Since the beginning of data availability for the acceding countries in 1997, a huge disinflation process has taken place. The weighted standard deviation of inflation rates within all acceding countries taken together decreased from more than 5% in the first half of 1997 to around 2% since mid-2001. At the same time, the average inflation rate in the acceding countries dropped from more than 14% in January 1997 to less than 2% at the beginning of 2003. It is noteworthy that in mid-2003 the Czech Republic, Lithuania and Poland had lower inflation rates compared with the best performing EU Member States, such as Germany, the U.K. or Belgium. Although some of the acceding countries presently still show above-average inflation rates, the relatively small GDP weight of the upcoming EU Member States explains the small influence on the overall dispersion measure.⁶

To sum up, measures accounting for country weights apparently do not support the claim of some international institutions that euro area inflation differentials have pronouncedly increased since the beginning of monetary union. A look at measures for

inflation differentials within a hypothetically enlarged euro area reveals a relatively minor impact on the inflation differential of the EU-15 in the recent past. During the past 15 months, inflation differentials as measured by the GDP-weighted standard deviation were very similar no matter whether they were based on EU-12, EU-15 or EU-15+10 data. In the case of the acceding countries this can also be attributed to their small GDP weights.

3 Inflation Differentials and Their Underlying Reasons

This chapter reviews the major theoretical arguments why inflation rates may deviate permanently or temporarily within a given group of countries. As the issue of inflation differentials is of major policy relevance only within a group of countries participating in a currency union, we will consider the current euro area as the benchmark for our analysis. We will give an overview of the various factors causing inflation differentials in the euro area and discuss their present and future relevance. In some selected cases we will also refer to the generalization of our results to the whole group of current EU countries.

While there are many studies about inflation differentials and their possible underlying reasons in the current EU Member States or the euro area countries, there are almost no such studies covering the acceding countries. Therefore we assess the role factors underlying inflation differentials play in the acceding countries compared to the current euro area and what relevance they will have in the future.

⁶ In 2002 the nominal GDP of the acceding countries put together amounted to only 4.8% of euro area GDP and to 6.2% of EU GDP.

Section 3.1 assesses the cyclical dimension of inflation differentials. Unless business cycles are fully synchronized, differences in the cyclical position will translate into inflation dispersion. Section 3.2 examines the two main external factors that can lead to increased divergence in inflation developments: oil price shocks and exchange rate fluctuations. Section 3.3 finally considers factors related to price level convergence and to different developments of administered prices or taxes.

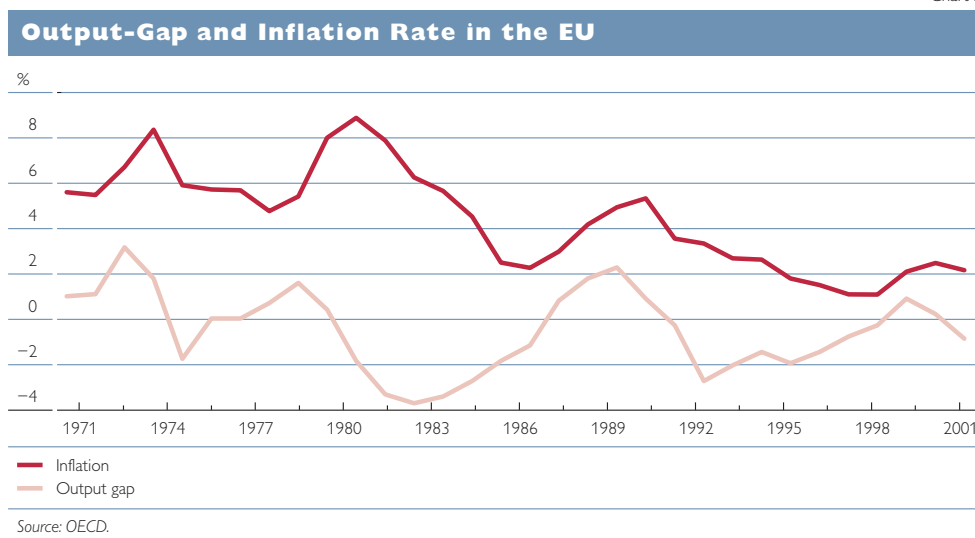
3.1 Cyclical Factors

The cyclical position of an economy is one major factor in inflation developments. This is illustrated in chart 3, which relates the most common meas-

ure for the cyclical position, the output gap (defined as the deviation of actual output from potential GDP as a percentage of potential GDP), to the EU inflation rate. The clearly visible co-movement confirms the close relationship of these measures.

For a panel of 11 EU countries (EU-12 without Luxembourg) this visual result is confirmed by regressing yearly national inflation rates (measured by the CPI) for the period 1971 to 2001 on the output gap. The first column in table 1 shows a positive and highly significant coefficient, indicating that output gaps play an important role in inflation developments in the euro area.⁷ The same exercise carried out for the EU countries produce similar results.

Chart 3

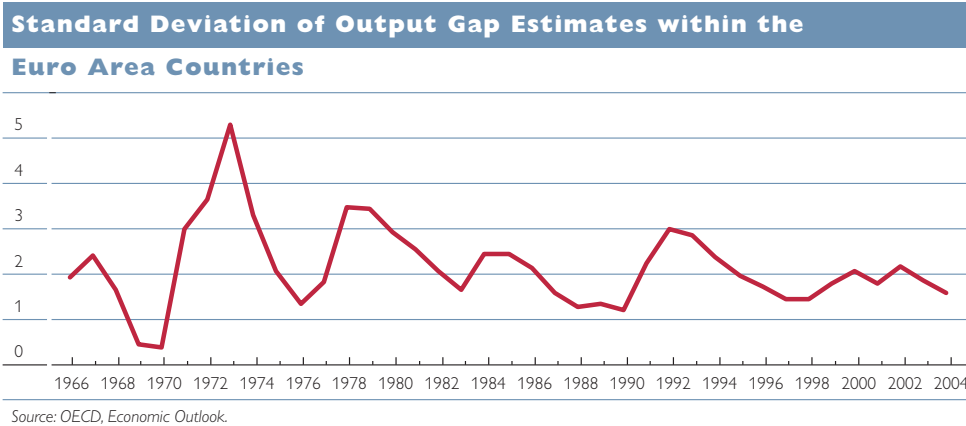


As long as business cycles within a group of countries are not perfectly synchronized, deviating cyclical movements will be a fundamental cause of inflation differentials. Within a monetary union monetary policy can no

longer be used as an instrument to stabilize national inflation rates; rather, adverse inflation developments have to be addressed by national economic and fiscal policies. Without any such actions, the move of a group of coun-

⁷ The coefficient of the output gap is positive throughout the models presented in columns 1 to 4, it is however, not significant in the last model as long as we allow for fixed country effects. The reason is the relatively low variability of the output gap variable compared to the other variables in the model so that the fixed effect specification picks up most of its explanatory power.

Chart 4



tries to a monetary union can in principle be assumed to lead to a higher degree of cyclically induced inflation differentials. The theory about the endogeneity of optimal currency area criteria, however, says that – provided intra-industry trade is high enough – business cycle synchronization increases for a group of countries participating in a monetary union so that the importance of cyclically caused inflation differentials should play a decreasing role.

Chart 4 shows the evolution of the standard deviation of annual output gaps for the 12 euro area countries. The fact that output gap dispersion has remained at a relatively moderate level since the run-up to the common currency could indicate such a narrowing of cyclical developments. If this observation continues, the role of inflation differentials should decrease. So far, however, a structural break in the series cannot be detected with econometric tools.

As regards the acceding countries, there seems to be an emerging view according to which business cycles are getting increasingly synchronized with those of the euro area. Although Babeckii et al. (2002), Fidrmuc and Korhonen (2003) and Korhonen

(2003) show the presence of asymmetric demand and supply-side shocks in some of the acceding countries, Frankel and Rose (1998) take the view that symmetric shocks are likely to dominate after the formation of an enlarged monetary union. Actually, Fidrmuc (2001) demonstrates that besides bilateral trade intensity the precondition of the endogenous convergence of business cycles is a high share of intra-industry trade in total trade. Hence, increasing business cycle synchronization can be explained by the fact that some acceding countries such as the Czech Republic and Hungary have high intra-industry trade vis-à-vis the euro area. In contrast, countries with lower intra-industry trade, such as Latvia, Lithuania and Poland, may experience less synchronization.

3.2 External Factors

The two most common external factors that can have a dramatic impact on inflation rates are changes in the exchange rate and oil price shocks. This section first provides evidence that these two factors matter for inflation and then discuss arguments why this effect may differ considerably across countries so that it can also explain part of inflation differentials.

3.2.1 Exchange Rate Pass-Through

An important external factor that affects inflation rates are changes in the nominal exchange rate. This can be referred to as the exchange rate pass-through. Indeed, changes in the nominal exchange rate first impact on import prices, and this effect subsequently feeds into prices of domestic tradable goods and finally into a broad set of price groups and into overall inflation. The extent of the pass-through depends on the share of imported final goods and the share of imported intermediate goods in domestically manufactured goods. But expectations are also bound to play an important role: changes in the exchange rate viewed as permanent are likely to have longer-lasting effects on prices in contrast to changes considered to be transitory. In addition to this, it has been shown recently that the larger the change and the lower the volatility of the nominal exchange rate, the higher the pass-through will be.

The second column in table 1 estimates the effect of a change in the nominal effective exchange rate (NEER henceforth) – a synthetic measure that weights the bilateral ex-

change rates according to the trade weight of the respective country – on inflation rates in euro area countries. The negative and significant coefficient indicates that a nominal appreciation/depreciation of the NEER will have a negative/positive impact on inflation. The estimated coefficient below unity corroborates earlier studies (see Goldberg and Knetter, 1997, for a review of the literature). The main factor behind this incomplete pass-through is third degree price discrimination⁸ in the markets, i.e. market segmentation. According to Darvas (2001), this is mainly due to transportation costs, tariff and non-tariff barriers, considerable differences of even highly homogenous goods, home or brand loyalty, the presence of multinational firms and cross-border intra-firm trade.

Not only asymmetric exchange rate shocks but also those that occur simultaneously across countries could lead to changes in inflation differentials. Columns 3 and 4 in table 1 indicate that the openness of an economy, defined as the sum of exports and imports of goods divided by GDP, is an important factor determining the exchange rate shock pass-through. In

Table 1

Determinants of Inflation Rates¹⁾

Variable	1	2	3	4
Output gap	0.136***	0.091*	0.102**	0.059
Change in exchange rate		-0.292***	-0.029	
Change in exchange rate x openness			-0.003***	-0.003***
Oil inflation		0.016***	-0.009	
Oil inflation x oil dependency			0.165***	0.118***
Oil inflation x oil intensity			0.003***	0.003***
Observations	359	326	285	285
R ² _{adj}	0.29	0.47	0.46	0.46

Source: Eurostat, OECD, IMF, IEA.

¹⁾ Columns (1) and (2) based on all euro area countries except Luxembourg for the period 1971-2001. Columns (3) and (4) also without Greece. Fixed effects.

Note: *** (***) [*] denotes significance at the 1% (5%) [10%] level.

⁸ First degree price discrimination is when for every consumer the highest price he/she is willing to pay is charged. Second degree price discrimination refers to prices being determined in terms of sold units of the product. Under third degree price discrimination, different prices are charged for different segments of the market characterized by differences in e.g. geographical location, age and sex.

2002, openness ranged from less than 50% in Italy, Spain and France to more than 100% in Belgium and Ireland.

Provided that the European integration process leads to a further intensification of intra-EU trade and a decrease in market segmentation, the importance of exchange rate shocks on inflation rates and inflation differentials is expected to diminish. With regard to the acceding countries, the exchange rate pass-through should play an important role because most of them are very open economies, with openness ratios ranging from 74% in Latvia to about 130% in Estonia and Slovakia in 2002. Poland is a relatively closed economy with an openness ratio of roughly 50%. However, the empirical literature is rather mixed in this regard. Whereas Christoffersen et al. (2001) and Przystupa (2002) estimate the exchange rate pass-through to be strong in the acceding countries, Ganev et al. (2002) show that the link between changes in exchange rates and inflation rates was anything but stable in Hungary and Poland in the late 1990s. Results in Darvas (2001) suggest that in 2000 the degree of the pass-through from the exchange rate to overall inflation ranged from 15% to 40% in the Czech Republic, Hungary and Poland.

Given high overall openness, and since in all acceding countries, except for Lithuania, the share of trade with the EU in total trade was more than 50% – and as high as 65% in Hungary – in 2002, the adoption of the euro would in the future considerably dampen inflation differentials caused by exchange rate shocks between the acceding countries and the current euro area countries.

3.2.2 Oil Price Shocks

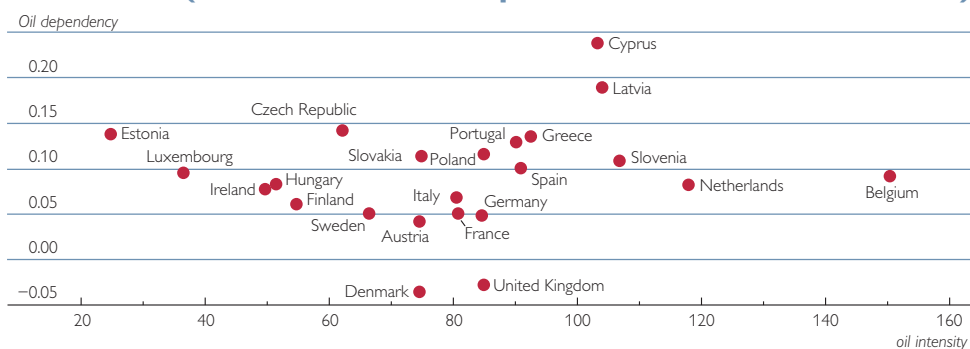
Oil price shocks have an impact on the inflation rate that materializes in several “waves.” Oil prices have a direct first-round effect on the energy component of consumer price inflation. A way to evaluate the average delay of the effect of oil price developments on energy prices is to determine the lag length at which the correlation coefficients between the oil price and the energy price inflation series is highest. Following this approach we get an estimated lag of three months for the euro area. There is, however, evidence of the asymmetry of the lag length: While the pass-through of positive oil price shocks on energy prices takes place almost instantaneously (lag of one month), the estimated lag length is eight months in the case of decreasing oil prices. Transport costs will also almost immediately react to oil price changes. Examples of price groups that show indirect or delayed first-round effects of oil price shocks are producer prices (estimated lag length nine months) or prices for non-energy industrial goods (more than two years). As second-round effects we finally understand the delayed pass-through of oil price changes on consumer price inflation through the response of wages.

The second column in table 1 shows evidence of this positive and significant impact of oil price changes (in national currency) on inflation rates. It is noteworthy that the estimated coefficient is fairly low. This can be put down to the fact that taxes account on average for up to 70% of fuel prices in the euro area and thus play a buffer role in passing oil price changes onto consumer prices.

Having shown the importance of oil price developments for changes in inflation, we now turn to the – at

Chart 5

Oil Dependency (Net Oil Imports over GDP) and Oil Intensity of Production (Industrial Oil Consumption over Industrial Production)



Source: OECD, Eurostat.

least – three ways in which oil price shocks can contribute to inflation differentials. First of all, oil price increases can be passed through onto consumers more easily under strong economic conditions. This implies that countries with higher positive output gaps may also experience a quicker oil price pass-through, so that inflation differentials may increase. The other two channels relate to a country's oil dependency ratio, defined as the ratio of net oil imports to GDP, and to the oil intensity of production, defined as industry oil consumption divided by industrial production. The more a country depends on external energy supply and the more energy intensive its production is, the higher the oil price effect on inflation will be. These effects are examined in columns 3 and 4 of table 1. The signs and significance levels of the coefficients indicate that the oil dependency ratio and the oil intensity of production are relevant factors explaining the speed of the oil price pass-through. In 2001 oil dependency ratios ranged from 3% in the United Kingdom and Denmark

to 13% in Greece, Portugal and Spain. Oil intensity ratios were lowest in Luxembourg (39%) and Finland (56%), countries with a highly service-based production structure, and highest in Belgium (148%) and the Netherlands (117%). The further to the right upper corner countries are in chart 5, the more their inflation rates depend on oil price changes.

Chart 5 illustrates the relevance of oil price developments for inflation rates in the acceding countries.⁹ All the acceding countries are heavily dependent on oil imports compared with the EU average. The oil dependency ratio exceeds the respective numbers of EU countries in the case of Lithuania, Cyprus, Latvia, the Czech Republic and Estonia, while in the Slovak Republic, Poland, Slovenia and Hungary, it is comparable to that found in the EU catching-up Greece, Spain and Portugal. On the other hand, oil intensity is equal to or slightly below the EU average for all acceding countries except for Slovenia, Latvia and Cyprus.

The future sensitivity of inflation and inflation divergences to oil price

⁹ No comparable data for Malta. Lithuania is not shown in the chart due to limited scale (oil dependency ratio: 0.29%, oil intensity: 74%).

shocks will depend on the further disentanglement of oil demand from GDP growth. Technological progress, the shift from the industry to the service sector, the development of new energy sources as well as energy-saving measures are key factors in this respect. The need for improvement still seems to be huge, especially in the acceding countries.

3.3 Price Level Convergence

There is a group of factors that are all related to price level convergence. If prices expressed in a common currency are initially different across countries, convergence to a common price level implies higher inflation in countries with initially lower prices. Section 3.3.1 deals with price level convergence with a special focus on tradable goods. In this case convergence is a direct consequence of progress towards a single European market. Trade liberalization and the completion of Stage Three of EMU are well in progress and should therefore be of transitory nature. Section 3.3.2 summarizes evidence of the Balassa-Samuelson effect that works through convergence of nontradable goods prices. As this phenomenon is related to the gradual process of convergence of productivity, the impact on inflation differentials can be assumed to be of longer-term importance. Section 3.3.3 takes a look at the relative weights of HICP subgroups within the overall index. Sections 3.3.4 and 3.3.5, finally, assess the importance of regulated and administered prices as well as taxes for inflation differentials.

3.3.1 Price Level Convergence for Tradable Goods

Differences in price levels may provide a potential explanation for di-

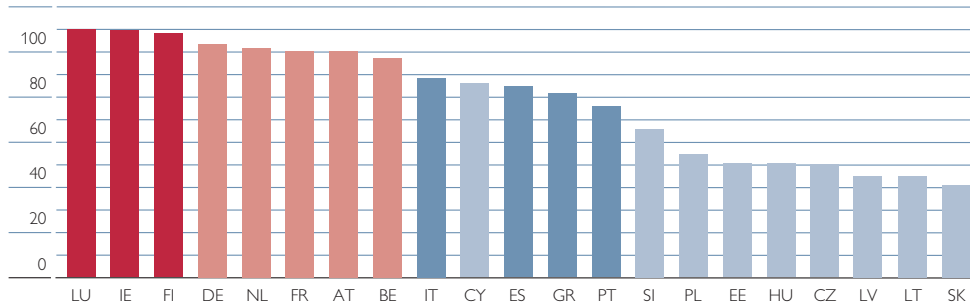
verging inflation developments in European countries. If price levels are initially different across countries, convergence towards a common price level implies higher inflation rates in countries with initially lower price levels during the transition period. The driving force behind price level convergence is the progress towards a single European market, ranging from trade liberalization to the adoption of the single currency. While the first factor should already have materialized to a large extent for the current EU Member States, there is still further convergence to be expected through increased transparency following the introduction of the common currency.

To compare price levels in different countries, Rogers (2001) constructs a proxy for the price level in each country. For this purpose, data is obtained from the Economist Intelligence Unit, which has calculated a cost-of-living index for major cities worldwide since 1981 on a yearly basis by directly recording local prices of specific goods like bread, a pair of blue jeans, a haircut or the rent of an apartment. The aggregated price level data – based on actual prices of 168 goods for 26 cities in 18 countries – provide evidence in favor of price level convergence in Europe. Between 1990 and 1999 prices became less dispersed in the euro area. Convergence was especially evident for tradable goods and stronger in the first half of 1990s. The statistically significant and robust negative relationship between 1999 price levels and the 2000 aggregate inflation rate in Europe may indicate that price level convergence is an important factor in explaining inflation differentials also for more recent data, especially for the low-price countries Greece, Portugal and Spain.

Chart 6

Price Levels in the Euro Area and in the Acceding Countries,

2002 (EU-15=100)¹



Source: Eurostat/NewChronos.

¹ Price levels are standardized by using the EU-15 and not the EU-12 average in the denominator. The reason for this is that these are official calculations by Eurostat. However, note that the difference between averages based on the EU-15 and on the EU-12 are rather insignificant.

Obviously, price levels for major cities cannot be viewed as representative for the national price level. A more appropriate data set can be obtained from the International Price Comparison program launched under the aegis of the United Nations during the 1970s, which provides a unique dataset of price levels. Price levels of the EU Member States and the acceding countries are calculated by Eurostat on the basis of price data of reasonably comparable goods and services, expressed in terms of the EU-15 average. Chart 6 shows that in 2002 there were still substantial differences in price levels across the euro area. A closer look reveals that these differences can be observed basically between three homogenous sub-groups of euro area countries: the countries with the highest relative price level, Luxembourg, Ireland and Finland, the second group, denoted as the core countries group, consisting of Austria, Belgium, France, Germany and the Netherlands, which exhibit very similar price levels with a maxi-

mum deviation of 6,5%, and finally the group of Mediterranean countries, Italy, Spain, Greece and Portugal;¹⁰ the latter have price levels that are by up to 25 percentage points lower than the EU average.

Regarding the acceding countries, chart 6 reveals a huge gap between them and the euro area.¹¹ The price level of most acceding countries is half as high as in the euro area. An exception is Cyprus, whose price level is comparable to that of the Mediterranean EU countries.

Based on a Eurostat dataset including roughly 40 components of the overall price level, we classify prices into six categories: durable goods, semidurable goods, foods, market and nonmarket services and real estate prices. Based on the same four groups of countries like chart 6, table 2 shows that goods prices are highest in group 1 and provides some evidence for price level convergence for durable goods. Note also that prices of durable goods seem comparable also for the acceding countries. However, it turns out that

¹⁰ It should be mentioned that Italy is somewhere between group 2 and 3. As we will see, in some respect, Italy could be assigned to group 2 whereas in other cases, it shows more similarities with the other Mediterranean EU Member States.

¹¹ Data for Malta are not available.

Table 2

Relative Price Levels of Goods and Maximum Deviations, 2002 ¹⁾						
	Group 1	Group 2	Group 3	EU-12	CEEC-8	EU-12 + CEEC-8
<i>Average price level relative to the EU-15 average (EU-15 = 100)</i>						
	%					
Durable goods	110.0	101.5	99.0	x	88.7	x
Semidurable goods	108.3	102.8	89.1	x	68.2	x
Food	115.0	99.2	90.2	x	68.5	x
<i>Maximum price level over minimum price level within the group</i>						
	percentage points					
Durable goods	0.18	0.05	0.16	0.27	0.19	0.44
Semidurable goods	0.32	0.20	0.21	0.55	0.53	2.52
Food	0.19	0.13	0.19	0.51	0.45	1.78

Source: Authors' own calculation based on data obtained from Eurostat.
¹⁾ Group 1: Finland, Ireland, Luxembourg; Group 2: Austria, Belgium, France, Germany, the Netherlands; Group 3: Greece, Italy, Portugal, Spain; CEEC-8: CEEC-5+3 Baltic countries.

prices deviate the least among the core countries, i.e. Austria, Belgium, France, Germany and the Netherlands. By contrast, in the case of the Southern European countries, intra-group differences are by far higher compared with the core countries.

At the same time, the price level of semidurable goods and foods is still considerably below the EU-15 average in Greece, Italy, Portugal and Spain. One reason for this might be that their price level is determined to a greater extent by local conditions, given that these goods are less tradable internationally and more labor intensive and have a larger service component. As a consequence, in countries with lower wage and service price levels, such as Greece, Italy, Portugal and Spain, prices for this kind of goods are also lower. Finally, the patterns emerging for the Southern European euro area countries are all the more true for the acceding countries. For instance, for semidurable goods and foods, the price level in the most expensive euro area country is roughly twice as high as in the cheapest CEE acceding country.

3.3.2 Price Level Convergence for Nontradable Goods:

The Balassa-Samuelson Effect

Let us now turn to the price level of nontradables, more specifically to services. In general, service prices are believed to be more dispersed than goods prices. This seems to be confirmed in table 3, which shows deviations as high as 91% and 138% in non-market services and property prices, respectively, throughout the entire euro area. As in the case of goods prices, there is a relatively high price homogeneity within groups 1 and 2 and higher dispersion across Southern European countries. It is noteworthy that prices of market services are strikingly similar across the core countries and within group 1. But more importantly, the price level of both market and nonmarket services is by about 20% lower in the Southern European countries compared with other euro area countries. This also holds true for property prices, which differ by more than 30%.

In the acceding countries, market service prices were half as high as in the euro area, and the difference in nonmarket services and property prices is even larger: The difference between the highest and the lowest price levels amounts to 185% for market

Table 3

Relative Price Levels of Services and Maximum Deviations, 2002 ¹⁾						
	Group 1	Group 2	Group 3	EU-12	CEEC-8	EU-12 + CEEC-8
Average price level relative to the EU-15 average (EU-15 = 100)	%					
Market services	105.6	102.9	81.1	x	55.5	x
Nonmarket services	110.8	101.5	83.2	x	41.3	x
Property prices	113.2	106.4	68.6	x	41.5	x
Maximum price level over minimum price level within the group	percentage points					
Market services	0.03	0.08	0.23	0.48	0.56	1.85
Nonmarket services	0.10	0.23	0.69	0.91	1.34	3.30
Property prices	0.28	0.30	0.54	1.38	0.62	3.58

Source: Authors' own calculation based on data obtained from Eurostat.

¹⁾ Group 1: Finland, Ireland, Luxembourg; Group 2: Austria, Belgium, France, Germany, the Netherlands; Group 3: Greece, Italy, Portugal, Spain; CEEC-8: CEEC-5+3 Baltic countries.

services and is as large as 330% and 358% for nonmarket services and property prices, respectively.

All this leads us to conclude that at present, the euro area is composed of a core region, i.e. group 2, and a group of countries (group 3) that is still in a catch-up phase. Besides, there are some outliers such as Finland, Ireland and Luxembourg. The adoption of the euro by the acceding countries would lead to more heterogeneity within the euro area: in addition to the core countries, two groups of countries at different stages in the catch-up process would emerge.

The Balassa-Samuelson (BS) effect is one popular explanation for differences in service prices. Let us assume a country with two sectors, an open sector producing tradable goods and a closed sector producing nontradable goods. Given that wages are assumed to be linked to labor productivity in the open sector and because wages are expected to equalize across sectors, the price level of the closed sector is determined by the productivity level prevailing in the open sector. This is one reason why in countries with lower productivity levels in the open sector service prices tend to be lower.

Table 4

Inflation Due to the Balassa-Samuelson Effect											
	Austria	Belgium	Germany	Spain	Finland	France	Greece	Ireland	Italy	Nether- lands	Portugal
	percentage points										
Alberola-Tyrväinen (1998)											
1975–1993/96	1.8	3.1	1.3	3.1	2.4	1.7	x	x	2.4	2.3	x
1985–1993/96	1.5	2.7	1.3	3.5	1.5	1.6	x	x	2.4	2.1	x
Swagel (1999)											
1960–1996	x	1.7	0.3	x	1.4	0.2	0.8	x	1.8	0.5	2.0
1990–1996	x	0.2	0.0	x	x	–0.2	1.7	x	1.4	0.4	1.2
Aitken (1999)											
Forecast based on 1993–1996	x	x	x	x	x	x	x	2.9	x	x	x
Sinn-Reutter (2001)											
1987–1993/95	1.4	0.8	x	1.5	2.4	1.3	x	2.4	1.5	1.4	0.8
1991/1995–1997/99	x	x	x	x	x	x	4.3	x	x	x	x
Canzoneri et al. (2002)											
1973–1991	1.2	2.4	x	1.5	1.0	1.1	x	x	2	x	x
1973–1997	0.8	1.6	x	1.4	1.6	1.4	x	x	1.8	x	x
Lommatzsch-Tober (2003)											
1995–2002	1.5	1.0	0.1	0.4	1.2	1.5	–0.1	2.6	0.5	0.6	–1.0
AVERAGE	1.4	1.7	0.6	1.9	1.6	1.1	1.7	2.6	1.7	1.2	0.8

Source: Authors' own calculations based on the original papers.

Further to this, in the event that productivity growth is higher in the open sector due to catching up, unit labor costs and thus also prices will consequently increase faster in the closed sector. This implies that inflation rates will be higher the more pronounced productivity differentials are between sectors in any country. In the long run, the importance of the BS effect should slowly diminish in parallel to the progress of catching-up.

Table 4 summarizes the existing evidence in the literature on the magnitude of the BS for the euro area. There seems to be a common understanding that the magnitude of the effect tends to be slightly higher in the typical catching-up countries such as Spain and Greece. Notwithstanding its catching-up country status, the BS effect turns out fairly weak in Portugal. On the other hand, Belgium, Finland, Ireland and Italy record above-average inflation rates imputable to productivity growth. However, based on the most recent dataset taken from the studies summarized in table 4, Lommatzsch and Tober (2003) suggest that the BS effect is strikingly

weak in Greece, Portugal and Spain, whereas it is found high in low-inflation countries such as Austria, Belgium, Finland and France.

The BS effect has become very popular in explaining high inflation rates in the acceding countries. Table 5 summarizes the currently available estimates of the size of domestic inflation that can be attributed to the BS effect. A first strand of papers supports the view that productivity-induced service inflation, estimated to amount to up to 9%, has been at the root of high inflation in the acceding countries. However, recent research has demonstrated that this structural inflation is considerably lower. It amounts to only up to 3 percentage points in Hungary, Poland, Slovakia and Slovenia and to less than 1 percentage point in the Czech Republic and the Baltic States. The estimates show that the size of the BS effect differs substantially across the acceding countries. The reason for such a low BS effect in the acceding countries is mainly the low share of services in the CPI. Hence, larger productivity gains cannot fully feed into overall inflation. But at the same

Table 5

Inflation Due to the Balassa-Samuelson Effect								
	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Poland	Slovak Republic	Slovenia
	percentage points							
Backé et al. (2003)	0.6	×	4.7	×	×	9.6	×	3.7
Golinelli/Orsi (2001)	4.3	×	0.2	×	×	5.1	×	×
Rosati (2002)	1.2	2.2	4.1	×	×	3.9	×	2.2
Rother (2000)	×	×	×	×	×	×	×	2.8
Sinn/Reutter (2001)	2.9	3.4	6.9	×	×	4.2	×	3.4
Flet et al. (2002)	0.2	×	×	×	×	×	×	×
Mihaljek (2002)	0.3	×	1.6	×	×	1.4	0.6	0.6
Égert (2003)	×	1.3	×	×	×	×	×	×
Halpern/Wyplosz (2001)	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Kovács et al. (2002a) ¹⁾	0.7	×	2.5	×	×	×	×	1.3
Kovács/Simon (1998) ¹⁾	×	×	2.2	×	×	×	×	×
Kovács (2001) ¹⁾	×	×	2.1	×	×	×	×	×
Égert (2002a) ¹⁾	0.8	×	2.1	×	×	2	0.5	1.2
Égert (2002b) ¹⁾	0.8	×	2.0	×	×	2.5	-0.1	0.1
Égert et al. (2003) ¹⁾	0.4	0.7	1.4	0.3	0.5	2.2	2.1	1.3

Source: Authors' own calculations based on the original papers.

¹⁾ The inflation differentials originally computed against Germany are corrected using 0.6% from table 4.

time, its size is comparable to that in the euro area.

A closely related issue is wage flexibility, given that one of the pre-conditions for the BS effect to work is wage equalization between the open and closed sectors. In theory, the presence of strong and well-established trade unions enforces equal wage increases across sectors. Riboud et al. (2002) analyzed institutional reforms and the labor market performance in the CEECs in the 1990s. Although these countries have been adopting the set of policies and institutions common to EU Member States, some diversity among the CEECs persist. As a result, some countries have a more flexible labor market than others. However, when compared to EU and OECD members, most of the CEECs tend to be in the middle of the “labor market flexibility” scale.

The importance of trade unions has been decreasing in all the CEECs since the end of the 1980s, when virtually 100% of the labor force were union members. During the last decade, these countries moved away from purely centralized wage bargaining systems towards a more liberalized regime of wage negotiation. This development was supported by a huge number of newly created firms in the private sector. Meanwhile trade union density dropped in all transition countries to less than 35% on average (Paas, 2002), with Slovenia on the upper end and the Baltic countries on the lower end of the range. Interestingly, the coverage of collective agreements is not much higher than union membership, which can be traced mainly to the small number of sectoral or regional level agreements. Therefore most employees in the CEECs rely on individual employment contracts. This situation fosters

wage diversification and dampens the BS effect.

The relatively high labor mobility in the CEECs on the other hand fosters wage equalization. This mobility is a consequence of the fundamental structural change that characterized the transformation process in the CEECs and thereby led to a complete restructuring of labor demand. In terms of labor reallocation, the size of the agricultural sector has decreased. In addition, the countries have experienced a process of deindustrialization, while employment in the service sector has increased. Apart from this, major shifts have also occurred within sectors, e.g. in the manufacturing sector, which has become more concentrated in geographic terms (Hildebrandt and Woerz, 2004). These structural changes to some extent went hand in hand with labor reallocation across economic sectors and the adjustment of wages, but also with changing patterns of labor force participation and rising unemployment.

3.3.3 Differing Weights in the CPI Basket

Another factor that can play a relevant role for inflation differentials is the weight of different groups of goods and services in the national CPI basket. In the Mediterranean countries services have less whereas food and goods have higher CPI shares compared with the rest of the euro area. The differences between the euro area and the acceding countries are even larger. Table 6 reveals that the weight of services in the acceding countries is by up to 15 percentage points lower than the euro area average. In addition to this, it turns out that the share of goods, in particular of durable goods, is also smaller. By contrast, the rela-

Table 6

	HICP Weights in the Euro Area and in the Acceding Countries, 2002						
	Goods	thereof			Energy	Food	Services
		Durables	Semidurables	Nondurables			
	%						
Estonia	27.30	5.70	12.90	8.70	12.60	33.10	27.00
Latvia	24.50	5.70	9.00	9.90	12.90	37.80	24.80
Poland	26.70	4.20	9.20	13.40	14.30	35.20	23.80
Slovenia	30.10	11.60	11.00	7.50	12.90	25.90	31.00
Czech Republic	26.40	8.70	9.80	7.90	13.90	28.60	31.20
Hungary	28.40	8.20	10.40	9.80	13.50	28.60	29.00
Cyprus	34.20	12.60	13.10	8.40	7.50	23.20	35.20
Euro area	31.20	11.30	11.80	8.10	8.20	20.90	39.70

Source: Eurostat/NewChronos.

tive weight of goods related to basic needs such as energy and food in the acceding countries exceeds that of the euro area by far.

Weights represent the structure of households' consumption expenditure, which in turn is closely related to the degree of economic development and households' preferences. According to Engel's Law, the higher the disposable income, the less households spend on food. The generalization of this idea is that the higher the GDP per capita, the more households spend on services and less on foods and other durable and nondurable goods. This is also the case in the euro area, where the share of services increased from 33% to 40% between 1995 and 2002. At the same time, the share of goods, food and energy items decreased from 33%, 25% and 9% to 31%, 21% and 8%, respectively.¹²

The implication of all this is that in the event of economic convergence, the acceding countries will witness

changes in the structure of household consumption and thus in HICP weights, namely an increasing share of services and a decreasing share of foods. On the other hand, however, the share of goods, and especially that of durable goods, is particularly low in the Baltic countries and in Poland, indicating the scope for a possible increase in relative durable consumption and in the corresponding weights. Hence, merely changes in weights might lead to differences in inflation rates. However, since these changes caused by economic development will take time,¹³ their effect should not be overemphasized.

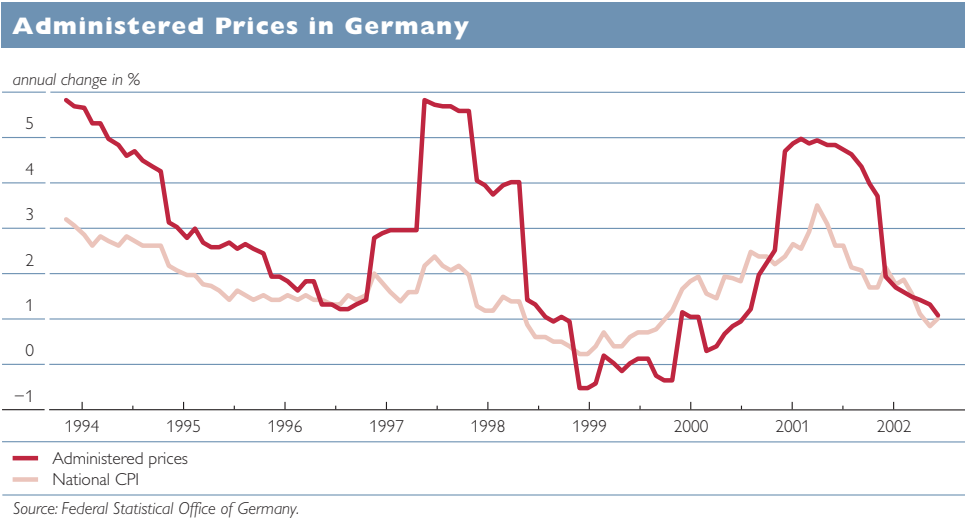
3.3.4 The Role of Regulated and Administered Prices

Government policy can have an important effect on inflation rates through changes in regulated and administered prices. The former relates to goods and services that are provided by the private sector but whose

¹² It should be noted that changes in weights can be decomposed into price and volume effects. For instance, the share of services could have increased because households consumed more but also because of increases in service prices. All the same, the relative importance of goods in the consumer basket may be the result of relatively less consumption falling on these goods coupled with market liberalization leading to decreases in goods prices.

¹³ Even if in the transition countries the CPI goods basket may change more quickly, the past adjustment of weights in the euro area can offer some guidance on future trends. A very simple calculation based on table 6 shows that in Poland it would probably take 15 years for the share of services in the basket to increase to 40%, a level comparable to that in the euro area, whereas in the Czech Republic and in Slovenia, this level would be reached already in some 10 years' time.

Chart 7



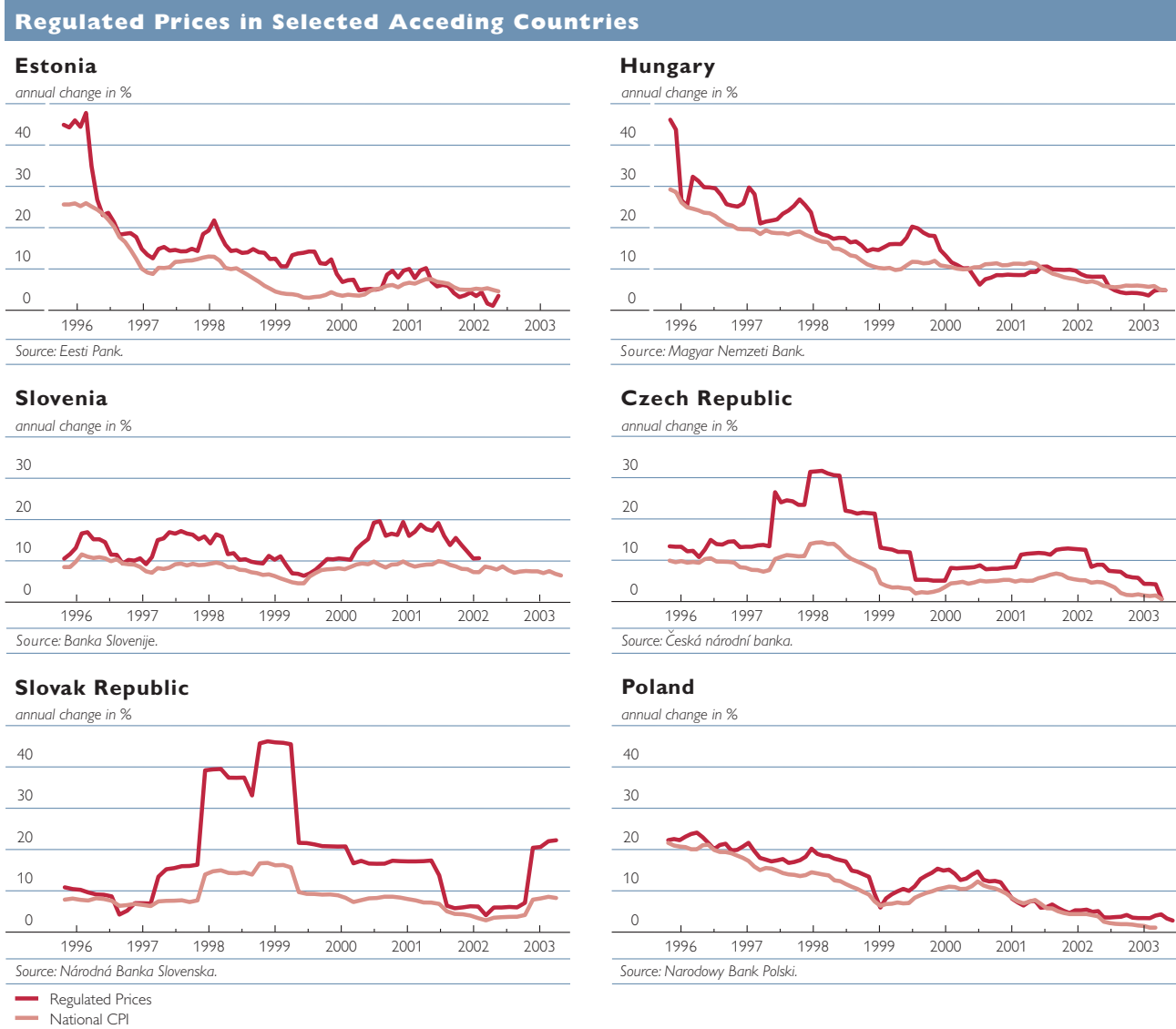
prices are fixed or subject to price ceilings. Typical examples are housing rents, prices for books or certain foodstuffs. The latter refers to fees charged for services provided by the government, for example charges for a new passport or parking fees. A large group of products can in principle be supplied by both the private and the government sector. Typical examples are fees for certain services in the health and education sectors, prices for water and energy supply, passenger transport fares, telecommunication rates and tobacco prices. In these cases price adjustments may occur following discretionary government decisions, but also as a consequence of the opening of these markets to competition through privatization.

As long as changes in regulated and administered prices happen in a systematic manner across countries they should not play a major role in determining inflation differentials within the euro area.¹⁴ The recent past, however, has seen examples of situations where these price adjustments occurred in a more unsystematic way so that their impact on in-

flation differentials may have been significant. The first example is the liberalization of network industries within the framework of the EU Cardiff process. As the speed of opening up these sectors differed considerably from country to country, an influence of these privatization measures on inflation differentials cannot be ruled out. Second, some countries may have used adjustments of administered prices in a more systematic manner in the run-up to EMU as a tool to consolidate their budgets or to lower their national inflation rates to fulfill the Maastricht convergence criteria. The third example of an increased role of administered price adjustments may have been the euro cash changeover. While the overall price effects of the introduction of euro banknotes and coins remained limited, there was evidence for some countries that the months before and after the cash changeover saw a high concentration of adjustments of fees and charges.

In chart 7, the example of Germany illustrates the importance of administered prices for inflation developments. Changes in administered

¹⁴ In what follows, the terms "administered" and "regulated" prices will be used interchangeably.



prices are found to have a significant impact on overall CPI inflation, partly due to their high weight of nearly 20% in the CPI basket. Adjustments of administered prices played an especially important role in the run-up to EMU and during the year 2001 when these items saw inflation rates of 4% to 6% and thereby exceeded headline inflation considerably.

In general, however, it can be assumed that the relevance of some of the factors underlying changes in administered prices will vanish in the near future. The run-up to EMU and

the cash changeover are past events that should no longer play a significant role. Once the major wave of liberalization of network industries is over, the importance of these price adjustments for inflation differentials may also disappear. Yet, regulated prices are likely to continue to impact on inflation for several reasons. First, since some sectors will remain in public hands for strategic or political reasons, prices in these sectors will not be determined by market forces; second, despite possible privatizations, in areas such as water supply or the rail-

ways, prices may continue to be set or at least be heavily influenced by public regulatory bodies because perfect competition is hardly conceivable in these industries.

In the acceding countries, administered prices play an even more important role, as they constitute a significant share of consumer price indices with a weight varying from about 10% to 25% in the national CPI. According to the 2001 Regular Reports of the European Commission, the share of regulated prices in the CPI is as follows: 18% in the Czech Republic, 15% in Estonia, 18.5% in Hungary, 22% in Latvia, 20.5% in Lithuania and 12.7% in Slovenia. According to national central bank reports, the share of regulated prices in the consumer price index is as high as 25.7% in Poland (2001) and 21.1% in Slovakia (2002).

In the acceding countries, administered prices represent not only a large chunk of CPI but their adjustments, usually related to domestic politics, may be massive, abrupt and systematically higher than the CPI. The transposition of the national CPI and administered prices in chart 8 illustrates this phenomenon for the Czech Republic, Estonia, Hungary, Slovakia and Slovenia.

The underlying factors of huge past and possible future increases in administered prices are threefold. First, administered prices were kept unchanged during the 1990s when other prices were liberalized. Therefore, large changes in administered prices merely mirror a late catch-up with other, chiefly market service prices. Second, a part of administered prices is still below cost recovery,

which implies further room for future increases. Third, the majority of regulated sectors are capital intensive. Prices below cost recovery, which do not allow for capital maintenance costs, go hand in hand with an ever increasing need for capital investments so as to improve quality and to close the gap to constantly improving EU standards. Consequently, sooner or later capital investments are to be taken into account.

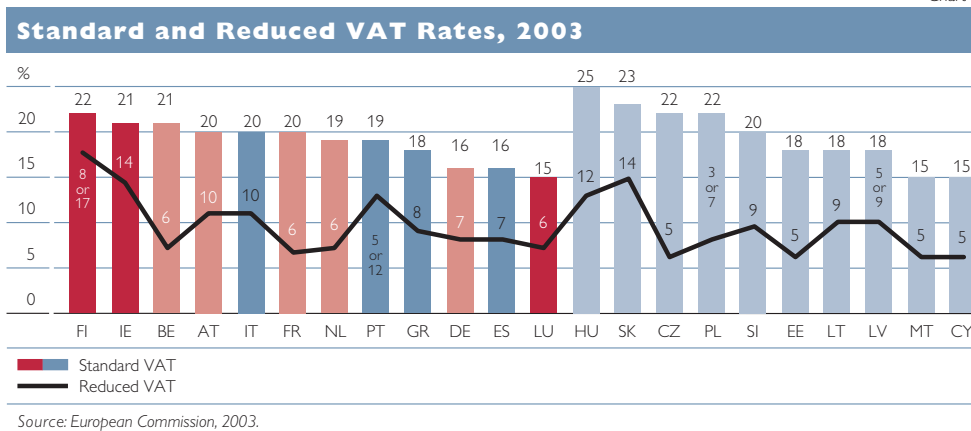
3.3.5 The Role of Taxes

It is widely acknowledged that differences in indirect taxes, such as VAT and excise taxes, are likely to play a non-negligible role in differing price levels across euro area countries, as shown in chart 9. Finland and Ireland, the countries with the highest price levels, have the highest standard VAT rates in 2003, whereas the core countries have rates ranging from 19% to 21%.¹⁵ Finally, Greece, Portugal and Spain apply below-average rates. The same applies to the reduced rates: countries with lower price levels tend to have lower reduced VAT rates. In addition, Greece, Portugal and Spain apply these rates more frequently. Of the 12 euro area countries, six, among them Greece, Italy and Spain make use of so-called super-reduced rates, which vary from 2.1% to 4.3%. Indeed, the price level and the VAT system appear to be linked in the euro area.

In contrast, low price level acceding countries have comparable or even higher standard and reduced VAT rates than countries in the euro area. For instance, Hungary and Slovakia have a standard rate of 25% and 23%, respectively, and it is 22% in the Czech Republic and Poland. Hence, the

¹⁵ It is worth recalling that EU Member States can apply the following four types of VAT rates: standard, reduced, super-reduced and zero rates. This can be completed by exemptions to VAT.

Chart 9



overall burden of indirect taxes is presumably higher in the acceding countries when compared with the euro area. Therefore, the huge gap in price levels between the euro area and the CEE acceding countries is apparently not a result of differing VAT rates.

Given the relevance of indirect taxes for euro area price level differences the question to be addressed subsequently is the extent to which changes in VAT rates may have contributed to price level convergence or divergence over the last decade. It turns out that VAT rates increased slightly in Italy, Spain and Portugal. So did they in the case of Germany and the Netherlands whereas they stayed unchanged in the remaining countries except for Ireland, where the standard rate decreased somewhat. The European Commission is currently seeking to simplify VAT regulations by limiting the use of zero and super-reduced rates. Another objective is that reduced rates should be used more homogeneously throughout the EU. If these amendments to the sixth VAT Directive will be applied, prices in countries using extensively super-reduced rates may in-

crease and they may decrease in countries introducing reduced rates (European Commission, 2003). This step is likely to contribute to dampening the impact of taxes on price levels.

When it comes to the acceding countries it should be noted that in the framework of their Pre-Accession Economic Programs (PEP), countries applying reduced rates, i.e. the Czech Republic, Hungary and Poland, committed themselves to shift a limited number of items, mainly services, from reduced rates to standard rates. In addition, the Hungarian government decided to increase the reduced VAT rates from 0% and 12% with effect from January 1, 2004, to 5% and 15%, respectively, in an attempt to consolidate public finances. Since standard rates will apply for a number of items for which currently only reduced or null rates are used, the Hungarian central bank (Magyar Nemzeti Bank) expects the year-on-year inflation rate to increase to 5.8% by end-2004. Also, Slovakia recently introduced a flat rate of 19% that is applied not only to VAT but also to income and corporate taxes.

4 Conclusions

Since the beginning of the 1990s, the magnitude of inflation differentials has decreased significantly, not only for the EU-12 or the EU-15 but also for the EU-15+10. This reflects a convergence of inflation rates in the EU and an overall disinflationary process in the acceding countries, which is chiefly driven by a stability-oriented macroeconomic policy. The often cited catching-up factors, which would work in the opposite direction, seem to be weaker than generally thought. But despite a dramatic convergence of inflation rates, inflation differentials did not vanish completely in the EU-12. They became a sensitive issue recently because sometimes they are wrongly taken as a backward-looking benchmark for the success of a monetary union.

There are a number of potential causes of inflation differentials. They range from cyclical factors via the exchange rate pass-through and oil price shocks to differences in productivity advances and changes in indirect taxes. An overview of these factors and of their impact on different groups of EU countries reveals similar patterns across countries. For instance, a similar degree of openness is expected to result in a quite similar exchange rate pass-through, and the same applies to oil dependency and oil intensity, factors which are key to the pass-through of an oil price shock.

Therefore, economies with a higher degree of openness, such as Belgium, the Netherlands and all the acceding countries (except for Poland), are expected to be more sensitive to changes in the exchange rate. Similarly, economies that are more dependent on oil imports or rely on more oil intensive industries are more exposed to oil price shocks. The ac-

ceding countries appear to be very similar to the Mediterranean countries in this respect.

Also, the acceding countries are often found close to the EU Mediterranean countries with regard to price levels. Although the price level of durable goods in these countries is roughly in line with prices in the euro area, service prices turn out to be half as high as in the euro area or even lower. However, recent calculations for the BS effect demonstrate that even though service price inflation might be driven by productivity gains, its impact on overall price inflation is rather small and that the size of the BS effect in the acceding countries is comparable to that found in the euro area.

In addition to this, whereas regulated and administered prices are a distinct feature of inflation determination in the acceding countries, one can also find surprisingly high shares of this kind of prices in EU-15 countries, fairly often misused to consolidate public households. Different indirect tax rates, especially concerning the VAT, are another factor determining price levels. VAT rates may still differ across countries, but there are ongoing efforts to harmonize the tax rates in the EU. Also, VAT rates in the acceding countries are well in line with those in the EU-12.

All said, it should be noted that the causes and extent of inflation differentials in the acceding countries do not differ fundamentally from those in the current EU Member States. Economic analysis of this phenomenon can hence rely on existing explanatory approaches and experience made in the industrialized countries so far.

However, the acceding countries' medium-term objective of introducing

the euro will bring the topic of inflation differentials back into focus. After all, the convergence criterion on price stability embodied in the Maastricht Treaty also relates to inflation differentials, establishing the reference value on the basis of the average of the three countries with the lowest inflation rates. For the single monetary policy, inflation differentials in general play a subordinate role, since in its monetary policy decisions the Euro-system primarily takes into account the inflation rate of the euro area as a whole. As in the past an appropriate interplay of fiscal and structural policies – the instrument for inflation targeting at the national level – best ensures a smooth adjustment process in the new Member States.

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